STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

IN THE MATTER OF THE PETITION OF TWIN LAKES UTILITIES, INC. FOR AN INCREASE IN ITS RATES AND CHARGES FOR WATER AND WASTEWATER UTILITY SERVICE PETITION	))))))	CAUSE NO.43128

PREFILED TESTIMONY AND EXHIBITS OF

JUDITH I. GEMMECKE – PUBLIC'S EXHIBIT NO. 1

ROGER A. PETTIJOHN – PUBLIC'S EXHIBIT NO. 2

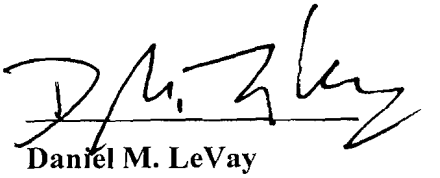
EDWARD R. KAUFMAN – PUBLIC'S EXHIBIT NO. 3

THE INDIANA OFFICE OF

UTILITY CONSUMER COUNSELOR

MAY 2007

Respectfully submitted,



Daniel M. LeVay
Assistant Consumer Counselor

CERTIFICATE OF SERVICE

This is to certify that a copy of the foregoing has been or will be served upon the following parties of record in the captioned proceeding by electronic mail or as otherwise agreed, on May 9, 2007.

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TESTIMONY OF JUDY GEMMECKE
CAUSE NO. 43128
TWIN LAKES UTILITIES, INC.

Introduction

Q: Please state your name and business address.

A: My name is Judith I. Gemmecke and my business address is Indiana Government Center North, Room N501, 100 North Senate Avenue, Indianapolis, Indiana 46204.

Q: By whom are you employed and in what capacity?

A: I am employed by the Indiana Office of Utility Consumer Counselor (OUCC) as a Senior Utility Analyst.

Q: Please describe your credentials.

A: I graduated from Indiana University in Bloomington, Indiana in May 1983, with a Bachelor of Science degree majoring in public administration with a concentration in public finance. I obtained a certificate in accounting from Indiana University, South Bend in January 1990, at which time I accepted a seasonal position with Coopers & Lybrand as part of its auditing staff. From September 1990 until March 1999, I held the position of field auditor for the Indiana Department of Revenue. In March 1999, I accepted a position as a staff accountant (now Utility Analyst) with the OUCC. Since joining the OUCC I have attended the NARUC Annual Regulatory Studies Program and the NARUC Utility Rate School as well as other educational programs and studies.

Q: Do you hold any professional licenses?

A: I am licensed in the State of Indiana as a Certified Public Accountant. I am also a Certified Grant Administrator.

Q: What is the purpose of your testimony in this proceeding?

A: I discuss adjustments to test year revenues and expenses. I also discuss the general revenue requirements and the updated rate base through December 31, 2006 as ordered by the Commission in its supplemental prehearing conference order. I will also discuss the OUCC's recommendation to change the sewer rate from a flat rate to a volumetric rate based on water consumption.

Q: What have you done to prepare for your presentation of testimony in this proceeding?

A: I reviewed Petitioner's testimony and schedules filed in this cause as well as workpapers filed by Petitioner. I reviewed Petitioner's books and records at its Northbrook Illinois office on January 4, and 5, 2007. I reviewed Petitioner's most recent annual report filed with the IURC (calendar year 2005). Additionally, I participated in preparing discovery questions and reviewed Petitioner's responses. I also discussed issues in this cause with other OUCC staff members and reviewed customer comments.

Q: Are there any schedules and/or attachments included with your testimony?

A: Yes. I have provided the following schedules based on my review and the testimony of other OUCC staff members.

Schedule 1 (W / S) – Revenue Requirement, Gross Revenue Conversion Factor, Reconciliation of Net Operating Income Statement Adjustments.

Schedule 2 – Balance Sheet as of June 30, 2006

Schedule 3– Income Statement for Year Ended June 30, 2006

Schedule 4 (W / S) – Rate Base and Working Capital.

Schedule 5 – Capital Structure and Synchronized Interest (for use in Income tax calculation)

Schedule 6 (W / S) – *Pro-forma* Net Operating Income Statement

Schedule 7 – Revenue Adjustments

Schedule 8 - Expense Adjustments

Schedule 9 (W / S) – Comparative Rate Tariff

(Note: The forgoing schedules reflect testimonial positions of all OUCC witnesses.)

Attachment JIG-1 – Salaries, payroll tax, and benefits spreadsheet

Attachment JIG-2 – Memo on Depreciation Rates from IURC 12/28/87

General Information

Q: Please provide an overview of Twin Lakes Utilities, Inc.'s customer base.

A: Petitioner is an investor-owned utility that operates both a water utility and a sewer utility under the name of Twin Lakes Utilities, Inc. ("Twin Lakes"). As of December 31, 2006, Twin Lakes had 3,154 water utility customers and 3,113 sewer utility customers. A breakdown of customer numbers reveal that residential customers make up 98%, and commercial customers make up 2% of its customer

base. The utilities' customer base has grown by an average annual rate of 1.60% over the last nine years (1997 – 2006). Twin Lakes bills its customers bi-monthly. The water utility rates consist of a base facility charge and a volumetric charge. The sewer utility rate is currently a flat rate for residential customers.

Revenue Requirements

Q: Briefly describe how rates are determined for an investor-owned utility such as Twin Lakes.

A: As an investor-owned utility, rates are calculated by first determining the return on rate base. This calculation determines what the net operating income should be in order to provide an opportunity for a reasonable return to the shareholders. Next, a determination is made as to the amount of the adjusted (*pro forma*) net operating income based on the utility's current rates. This determination is based upon the known, historical test year revenues and expenses updated to include changes that are fixed within the time period (twelve months from the end of the test year -6/30/06), known to occur, and measurable in amount.

By subtracting the net operating income determined through the adjustment process from the net operating income required by the return on rate base, one can determine the dollar amount of the increase needed to achieve the net operating income that is expected to provide a reasonable return to the shareholders. The increase in net operating income is then "grossed up" for taxes and fees related to the increased revenue and income. This process can be seen on Schedule 1, page 1 attached to this testimony.

Petitioner's Request

Q: Please explain your understanding of Petitioner's requested rate relief as filed in its direct and supplemental testimony.

A: Petitioner originally requested a 45.33% increase for its water rates and an 18.25% increase for its sewer rates in this phase of the proceeding. These increases were derived from the testimony of Michael Dryjanski (pages 9 and 10). After being allowed to update its rate base through December 31, 2006, the petitioner calculated an increase of 48.36% for the water utility and 19.73% for the sewer utility[1].

OUCC's Recommended Rate Increase

Q: What change in rates does the OUCC recommend?

A: The OUCC recommends an increase for water utility rates of 19.35% and a decrease in sewer utility rates of 1.58%.

Rate Base

Q: What rate base has Petitioner proposed in its case-in-chief and its supplemental testimony?

A: Petitioner's original case-in-chief rate base is shown on Schedule C attached to Mr. Dryjanski's testimony. That schedule shows an Adjusted Rate Base of $1,694,936 for the water utility, and $5,416,523 for the sewer utility. Between June 30, 2006 and December 31, 2006 utility plant in service increased by $209,419 for the water utility and $328,124 for the sewer utility. In supplemental

[1] Petitioner's response to OUCC data request question number 44.

testimony Petitioner's proposed rate base, as adjusted through 12/31/06, is $1,858,591 for water and $5,530,819 for sewer.

Q: Are there differences in the calculation of rate base by Petitioner and the OUCC?

A: Yes. The differences in the calculation include the amount of additional accumulated depreciation from 6/30/06 to 12/31/06; unamortized income tax credit; working capital, and the amount of Contributions In Aid of Construction ("CIAC") reduced by accumulated amortization of contributed property. (See Schedules 4W and 4S)

Q: What amount does the OUCC recommend for rate base?

A: In its supplemental filing, Petitioner recommended a rate base of $1,858,593 for water utility plant and $5,530,819 for the sewer utility plant. The OUCC recommends a rate base of $2,178,679 for the water utility and $6,071,559 for the sewer utility. The full calculation can be found in schedules 4W and 4S submitted with this testimony. These schedules also show a comparison of Petitioner's and the OUCC's calculations of rate base.

Q: Please explain the rate base component of additional accumulated depreciation from 6/30/06 through 12/31/06.

A: The Commission determined in its supplemental prehearing conference order that rate base could be updated through 12/31/06. This updating would include depreciating assets in service for that six months time frame. The six months of

depreciation that I have added to accumulated depreciation is one half of the full year *pro forma* depreciation found on Schedule 8, adjustment 9.

Q: How has the OUCC calculated Working Capital?

A: The OUCC's calculation is similar to Petitioner's except the OUCC has reduced the Operations and Maintenance Expense, on which the working capital is calculated, by half the annual amount of purchased power expense. In most cases, the total annual amount of purchased power expense would be deducted in arriving at a working capital amount because both the power expense and the utility's customer revenue flow are each one month in arrears. (In other words, a customer receives the service in one month and pays for it in the next month.) However, in this case Petitioner bills its customers bi-monthly but receives a power bill monthly. Therefore, I have allowed for half of the power expense to be included in working capital.

Amortization of Contributions In Aid of Construction ("CIAC")

Q: What is amortization of CIAC?

A: Amortization of CIAC is the practice of reducing the net amount of CIAC at the same rate that the asset is being depreciated.

Q: Has Petitioner amortized the amount of assets obtained by contributions as an off-set to the depreciation of those assets?

A: No.

Q: Do accounting standards require depreciating all depreciable assets?

A: No. In simple accounting terms, whether purchased through the investment by the owners or contributed by the customers, the assets are being consumed in the process of providing a service or product. Depreciation is an *allocation of the cost* of an asset over a period of time for accounting and tax purposes. Reversing out the depreciation on contributed property is necessary because the utility owner has no basis or "cost" in the asset. Depreciation is charged against earnings on the theory that the use of capital assets is a legitimate cost of doing business.[2] When contributed property is depreciated, the following happens: Expenses increase; net operating income and, therefore, retained earnings decrease; and shareholder equity decreases.

Q: What does the National Association of Regulatory Utility Commissioners ("NARUC") say about amortizing CIAC?

A: The NARUC system of Accounts ("NSoA") states the account for accumulated amortization of Contributions in Aid of Construction is used "if recognized by the Commission."

Q: Is the depreciation of contributed property recognized in determining taxable income?

A: No. The Internal Revenue Service has determined that, because the taxpayer has no basis in the property, it is denied depreciation on the property received as a contribution.

[2] http://dictionary.bnet.com/definition/depreciation.html. April 16, 2007

Q: Is the accounting standard the same as the regulatory standard?

A: That depends on what one considers the "regulatory standard." Clearly NARUC left the decision to state commissions. However, FERC (Federal Energy Regulatory Commission) and the FCC (Federal Communication Commission) require electric, gas and telephone utilities to reduce the plant account balances to which contributions from customers are made by the amount of contributions – before applicable depreciation rates are applied.[3]

Indiana is one of a handful of states that has allowed depreciation of contributed property (i.e. does not recognize the amortization of CIAC). This policy has a significant drawback because it depends on the premise that depreciation is for the replacement of plant, which it is not. The purpose of allowing recovery of depreciation in investor supplied plant is to allow the utility a "return of", or recovery of, its investment in plant. Affording depreciation of contributed plant allows the utility to recover capital that was not provided by the investors. The policy of allowing depreciation on contributed plant may also lead utilities into negative rate base situations because depreciation reduces rate base while the CIAC balance remains the same also reducing rate base. Eventually, there is no longer plant value to offset the value of the original contribution. Utilities that have a negative rate base are reluctant to invest in the utility because no return can be earned on additional investment. Therefore, the plant deteriorates along with customer service and environmental compliance.

[3] Accounting for Public Utilities; Hahne & Aliff; Matthew Bender & Co., Inc.; § 4.04[7], page 4-39.

Q: Could you give an example of how depreciation of contributed property affects the rate base?

A: Yes. Below is a simple calculation of rate base with and without the off-set to depreciation of contributed property:

EXAMPLE	Current Method depreciation of CIAC with no off-set of	OUCC Recommended Method depreciation of CIAC with off-set of amortization.
Utility Plant in Service	$1,000,000	$1,000,000
Less Accumulated Depreciation	650,000	650,000
Net Utiltiy Plant in service	350,000	350,000
Less: Contributions in Aid of Construction	400,000	400,000
Add: Accumulated Amortization of CIAC	0	220,000
Rate Base	($50,000)	$170,000

As one can see, without amortizing CIAC, a negative rate base situation can arise. If a utility has a negative rate base, then it will not be able to earn a return and will have no incentive to make reasonable and prudent investment in plant. When amortization of contributed property is recognized, the rate base will never be negative.

Q: What does the OUCC recommend regarding the amortization of CIAC?

A: For the reasons stated above, the OUCC recommends amortizing CIAC and recognizing the amortization in rates.

Q: How have you calculated the amount of accumulated amortization of CIAC?

A: I have used the ratio of accumulated depreciation to the utility plant in service. Below are the calculations for the water and sewer utilities:

	Water	Sewer
Accumulated Depreciation	$1,254,290	$2,778,248
Divided by Utility Plant in service	5,443,812	12,109,707
Percent depreciated	23.04%	22.94%
Contributions in Aid of Construction	$2,061,761	$3,734,590
Times percent depreciated	23.04%	22.94%
Accumulated amortization of CIAC	$475,043	$856,802

Q: What is the effect to rate base of including the accumulated amortization of CIAC?

A: This has the effect of increasing the value of rate base.

Q: Is there a related adjustment to depreciation expense when determining the revenue requirements?

A: Yes. If the above ratemaking treatment is allowed for the rate base, a reduction to the amount of depreciation allowed in expenses must also be made via amortization of CIAC.

Q: Have you made such an adjustment?

A: Yes. The adjustment is shown on schedule 6 and the detail of the calculation is shown on schedule 8, adjustment 10.

Pro Forma Net Operating Income

Q: When looking at Net Operating Income, what schedules can we refer to for details of *pro forma* amounts and making adjustments to test year amounts?

A: Schedules 6, 7 and 8 provide detail of *pro forma* amounts and adjustments to test year amounts. Schedule 6 is the *pro forma* net operating income statement. It shows the test year revenues and expenses, the adjustments to test year amounts, and the resulting *pro forma* under current rates amounts. The second column of adjustments shows the revenue increase or decrease necessary to achieve the required net operating income. It also shows the expenses that will change due to the change in revenue. Schedule 7 provides detail for the *pro forma* revenue and the resulting adjustments to test year amounts. Schedule 8 provides the detail for *pro forma* expense items that needed to be adjusted from the test year amounts.

Revenue adjustments

Q: Please explain your first adjustment to test year revenues at present rates.

A: The test year revenues for water sales were $815,906 and for sewer service the revenues were $1,504,196. (These figures do not include miscellaneous revenues.) During the test year, new customers began taking service and paying for that service. However, a full year's worth of sales was not reflected for those new customers because they began receiving and paying for service at various times within the year. To recognize a full year's worth of service that will be collected from these customers on an on-going basis, an increase in revenue from the test year amount was made. (Schedule 7 – Revenue Adjustments, adjustment 1) Petitioner's supplemental testimony and schedules reflect these same amounts.

Q: **Please explain your second adjustment to test year revenues at present rates.**

A: My second adjustment recognizes a full year of revenues for customers that have started service between July 1, 2006 and December 31, 2006. Petitioner gained four new residential customers for both water and sewer services within that six month period. Using average residential annual revenue as a reasonably anticipated amount of revenue to be derived from each new customer, I have added to the test year an additional $1,040 in water revenue and $1,933 in sewer revenue. (Schedule 7 – Revenue Adjustments , adjustment 2)

Expense adjustments

Salaries and Wages

Q: **Please explain the OUCC's adjustment to test year salaries and wages.**

A: The OUCC has increased test year allocated payroll by 4% to account for a planned wage increase to employees. While this does not acknowledge the full allocation of personnel that Petitioner has included in its *pro forma* expense, I do not believe Petitioner's case has established that its *pro forma* amounts are indicative of future expenses.

Q: **When examining Petitioner's *pro forma* salary amounts, what did you find?**

A: OUCC obtained actual salary amounts as of 1/5/07 during the records review at Petitioner's home office. Petitioner's *pro forma* amounts have two 4% pay increases from the January 2007 individuals' salaries. The new positions were allocated to Twin Lakes based upon certain assumptions. Petitioner's *pro forma*

salaries also include two positions that were not filled at the time of this filing. In addition, an extra person is listed in the allocated portion of Petitioner's workpaper[4] who does not appear in the un-allocated staffing figures. In Petitioner's calculation, this extra person results in an additional $4,930 in salary, $552 in taxes, and $3,690 in benefits.[5]

Q: What new positions have been added in 2006 and 2007?

A: In 2006 and 2007 Petitioner's parent, Utilities, Inc., added eight new positions which it allocated in part to Twin Lakes:

Maintenance/Operations:
- Regional Manager – Midwest Region
- Operator
- Operations Technician
- Regional Vice President – Operations (Midwest & Western Operations)
- Additionally, in February 2007 a Construction Inspector was hired.

Regional Office:
- Compliance Manager – Midwest & Western Operations
- Business Manager – Midwest & Western Operations
- Regional Project Manager

There are two additional positions proposed by Petitioner that have not been filled by Petitioner's parent, Utilities, Inc.:
- Regional Director – Midwest
- Administrative Assistant

Q: Has the OUCC included in its *pro forma* calculations for salaries, benefits, and payroll taxes the two unfilled positions included in Petitioner's calculation of *pro forma* salaries, benefits and payroll taxes?

A: No. The OUCC is not satisfied that Petitioner needs the Regional Director – Midwest since the utility already has a Regional Director – Midwest Operations

[4] Petitioner's w/p [b]
[5] Petitioner's answer to OUCC DR #47 agreed this person was included in error

and a Regional Manager – Midwest Operations. Consequently, the OUCC has not included this position in its *pro forma* salaries, benefits and payroll tax calculations.

The OUCC has also not recognized the unfilled Administrative Assistant position. By including the position in its case, Petitioner implied that the cost for both positions was a just, reasonable, necessary, and prudent expense, It has been five months since Petitioner presented its case-in-chief, but the positions remain unfilled. The OUCC has not included the Administrative Assistant position in its calculation of *pro forma* salaries, benefits and payroll tax calculations.

Q: Are there any other positions that are not included in the OUCC's *pro forma* payroll, benefits and payroll taxes expenses?

A: Yes. Petitioner has hired a Construction Inspector/Manager who will be primarily responsible for installations of mains, service connections, storage tanks and wastewater treatment plant construction. It is typical utility practice that the vast majority of the construction inspector's wages would be capitalized and his wages, taxes and benefits would not be included in operating expenses.

Q: Does Petitioner's requested recovery for labor expense match its anticipated staffing levels?

No. Petitioner has requested in its case-in-chief $437,766 in salaries. Using the staffing levels requested by Petitioner in this cause, adjusting for one[6] pay raise within the 12 months following the test period and using allocations of employees

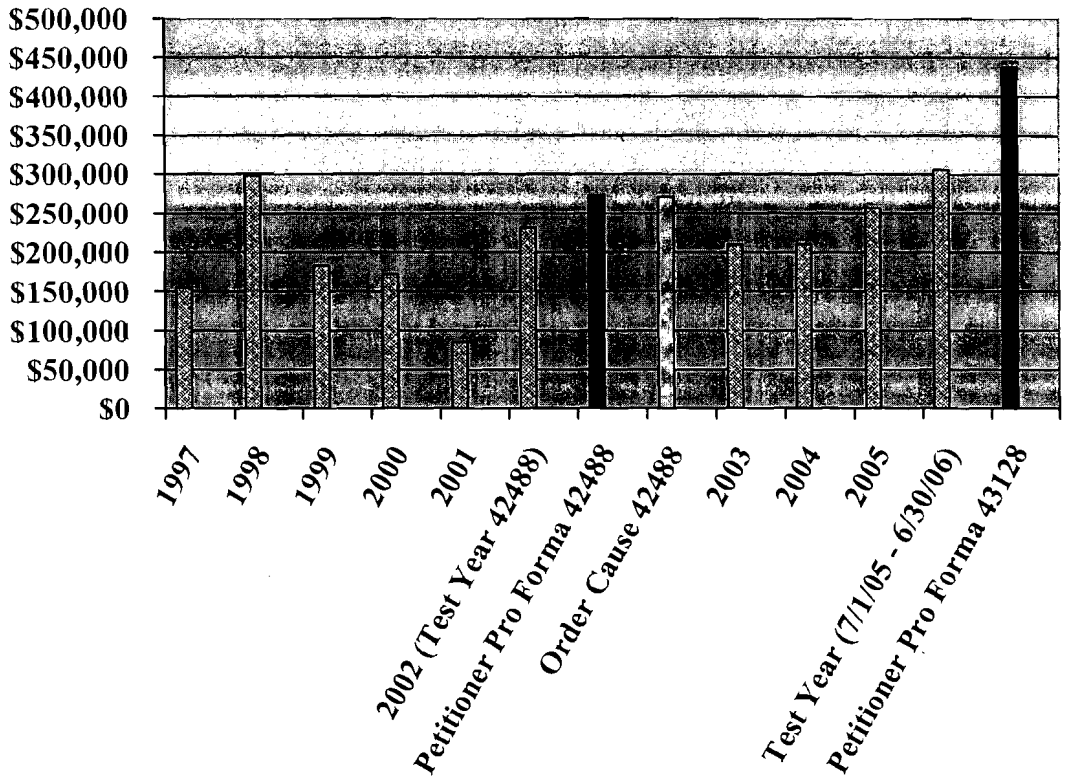
[6] Petitioner's calculation of pro form salaries included 2 annual increases past the 6/30/06 salary levels.

salaries at 6/30/06 (with the allocation of those newly hired based on the assumption that Petitioner's forecast is correct), the calculated salaries for both utilities together (water and sewer) is only $410,797. This almost $27,000 difference resulted from Petitioner including two annual salary increases of 4% each ($14,000), one ex-employee ($5,000), and correction of allocation percentages ($8,000).

Q: Does the OUCC have any further concerns about Petitioner's payroll expense?

A: In reviewing Petitioner's payroll expense in previous cases and past years, I noted a pattern with respect to requested staffing levels proposed by Petitioner and its affiliated regulated Indiana utilities. Petitioner's request is for a 43% increase in payroll expense over test year expenses and 71% over calendar year 2005. The chart below shows Twin Lakes' salary levels as taken from IURC annual reports, Petitioner's requested salary levels in its rate cases, and the level of salaries granted in the last rate case:

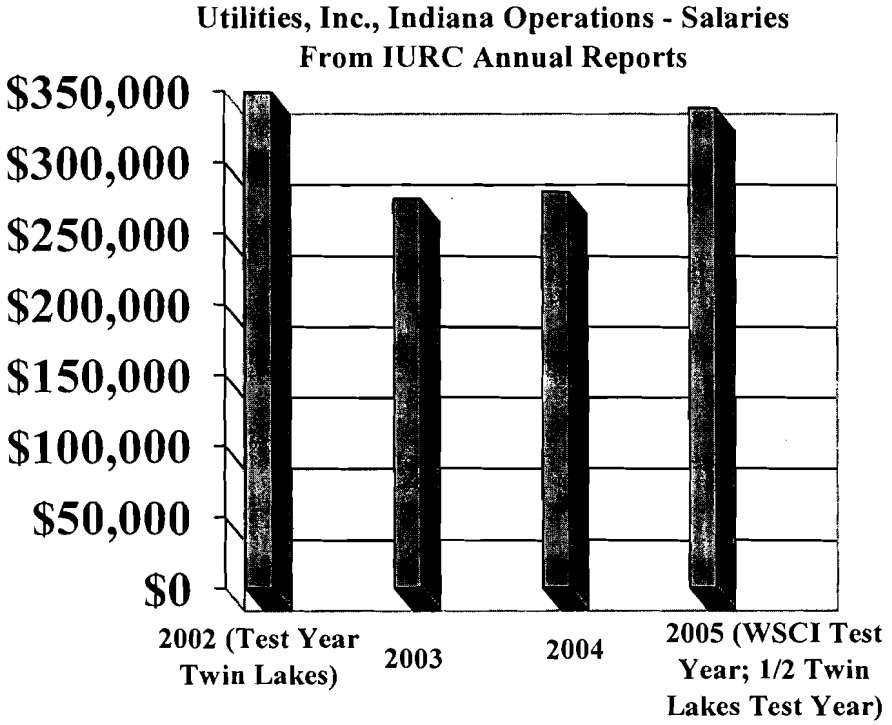
Twin Lakes - Total Salaries



As shown in the chart, Petitioner has asked for a certain level of rates to cover salary expense it indicated was necessary to provide adequate service; yet in years subsequent, the utility did not appear to have used that level of salary expense after all. This suggests at least two possibilities – Petitioner did not truly need the level of salaries it requested or Petitioner did not provide the level of service it had anticipated. In either case, the *pro forma* expense was not incurred.

Q: Did Utilities, Inc. utilize its employees from Twin Lakes to its other Indiana locations during those periods?

A: An advantage of having a utility with multiple locations is that one can move personnel around to where they are needed, thus providing economies overall. Information from Petitioner's IURC Annual Reports reflects that this was not the case. As seen in the chart below, it appears that in a test year the overall payroll expenses for Indiana systems go up, but in subsequent years it decreases[7]:



[7] The chart includes salaries for Twin Lakes, Water Service Company of Indiana, Inc. (purchased Nov. 2001), and Indiana Water Service, Inc. (purchased about 2001).

Payroll Taxes

Q: Based on the amount of salaries recommended by the OUCC, what amount for payroll taxes should be allowed for *pro forma* expenses?

A: The OUCC has calculated a *pro forma* payroll tax expense of $26,356.

Employee Benefits

Q: Based on the amount of salaries recommended by the OUCC, what amount for employee benefits should be allowed for *pro forma* expenses?

A: The OUCC recommends a total Employee Benefits expense of $55,570. Employee Benefits include health insurance, Pension (3%), 401(k) plan (2.92%), and other benefits such as disability insurance and life insurance. Health Insurance makes up the majority of benefits expense I recommend that the *pro forma* employee benefits expense should be equal to test year expense.

Wages charged to Plant (in-house labor used to produce assets)

Q: Please explain Petitioner's adjustment to expenses for "Operating Exp. Charged to Plant".

A: Based on my review of Petitioners records, workpapers, and testimony, Petitioner had test year expenses that are separated by its accounting system and transferred to assets. During the test year there was $39,133[8] that was originally recorded as expense but off-set later as pertaining to capital assets. Petitioner's explanation for *decreasing* this off-set to expenses was "Operating expense charged to plant has been adjusted to reflect an increase in operator salaries."[9] However, while Petitioner has proposed salary increases, the capitalization of the salaries actually

[8] MTD schedule B, adjustment c.
[9] MTD schedule B page 4 of 4, [c]

decreased. This counter-intuitive result can be traced to Petitioner's calculation. Petitioner calculated a percentage of wages, taxes and benefits that would be capitalized using test year operating expense charged to plant ($39,133) and dividing it by $395,780. The $395,780 was calculated based, not on test year expenses, but on 12 individuals' salaries, taxes and benefits for the quarter ended 6/30/06 and then multiplied by 4. This resulted in 9.89% of salaries & benefits being capitalized according to Petitioner's calculation. The 9.89% was then applied to O&M salaries, taxes & benefits of $390,832.

Q: Please explain the OUCC's calculation and how it differs from Petitioner's

A: The OUCC's calculation is shown on Schedule 8, Adjustment 4. The test year amount of payroll, payroll taxes, and benefits that were originally recorded as expense but off-set later as pertaining to capital assets ($39,133) is divided by test year amount of payroll, payroll taxes, and benefits - $386,539 ($305,627 + 25,342 + 55,570). This calculation results in 10.12% of payroll related expenses being capitalized during the test year. Applying that percentage to the OUCC's *pro forma* salaries, payroll taxes and benefits provides for $40,473 anticipated to be removed from operating expenses and charged to asset accounts.

Rate Case Expense

Q: Please show how the OUCC's and Petitioner's rate case expense differs.

A: The OUCC and Petitioner's calculations of *pro forma* rate case expense shown below:

Differences in items for rate case expense	Petitioner	OUCC
Legal Fees	$85,000	$30,000
Customer Notice	5,543	1,374
Travel	3,200	1,432
WSC Personnel	23,015	23,015
Cost of Capital Witness	7,000	7,000
Postage, Mailing, FedEx and Copies	12,000	200
Unamortized prior rate case expense	10,298	0
Total expenses for rate case	$146,056	$63,021
3 year amortization (divide by 3)	$48,685	$21,007

Q: Please explain why you have decreased legal fees associated with this rate case.

A: In its case-in-chief, the utility proposed total rate case expense of $146,056 including $85,000 in legal fees. However, there is nothing in Petitioner's case that would justify a legal expense of $85,000. To the extent Petitioner has incurred legal fees that exceed the amount the OUCC recommended for recovery, it should be noted that much of that attorney's time was caused by decisions made by the utility that made this proceeding unnecessarily complicated. Second, much of the time devoted to this matter related not to justifying a proposed rate but to addressing quality of service complaints made by its customers.

Q: Why have you reduced the other components of rate case expense?

A: Petitioner based its "customer notice" category on needing to send out four notices to each customer. Petitioner has only sent one notice. Petitioner's calculation of Postage, Mailing and copies expense had assumed the need for sending paper copies of everything to the OUCC, Intervenor, IURC, and Petitioner's attorney. The OUCC, Intervenor, and Petitioner's attorney have received all data request responses in electronic format. Therefore the need for

such a large expense for copying and postage for vast amounts of paper and postage is not necessary. Petitioner also included $10,298 for amortization of the last rate case. The last rate case (42488) will be fully amortized in April 2007. Therefore no amount is necessary for the amortization.

Consumer Price Index

Q: Has Petitioner included in its *pro forma* operations and maintenance expenses an amount for a general consumer price index increase?

A: Yes. Petitioner's adjustment [j] states a consumer price index increase of 3.4% is included in its filing.

Q: Does the OUCC agree that a consumer price indexed increase is fixed, known, and measurable for purposes of this rate case?

A: No. Petitioner has increased the expense items it believes the price of which will increase within 12 months of the test year. For example it has increased wages by 4%. The consumer price index ("CPI") and the inflation percentage that can be derived from it is a measurement of a basket of goods the average consumer might purchase. Such items are food, rent, durable goods, etc. These are not the typical items purchased by a utility business. For the items purchased by Petitioner, a general inflationary factor does not meet the "fixed, known, and measurable" standard used by the commission.

Q: Does the OUCC believe that a general increase in all Operation and Maintenance expenses is reasonable?

A: No. Any increase to any expense item needs to be verified and quantified that it is truly an expense that will cost a certain amount in the 12 months following the

test year. A general quantification based on an inflation rate for households does not satisfy the requirements of ratemaking in Indiana. If one were to use a CPI to be a proxy for actual price changes, one should not perform an average inflation calculation for a 3.5 year period as Petitioner has done. Rather, one would perform such an analysis over 1 year, preferably the most recent 12 month period.

Depreciation

Q: Please explain the differences between the Petitioner's and the OUCC's calculation of the amounts for depreciation expense.

A: The primary differences include the depreciation rate applied to vehicles and computers. The OUCC depreciated all depreciable property at the 2% composite rate for water property and 2.1% composite rates for wastewater property as standardized by the commission. (See Attachment JIG-2). Petitioner depreciated vehicles at 12.5% rate and computers at 25% rate. The use by Twin Lakes of the composite rate for depreciation was established in Cause No. 39050 and reaffirmed in Cause No. 39573.

Q: Does the OUCC have any further recommendations regarding depreciation of assets?

A: Yes, the OUCC recommends the composite rate for all depreciable assets be used in rate cases until Petitioner obtains approval from Commission to do anything other than composite rate. This may be accomplished by Petitioner by completing one depreciation study for all its Indiana operations and submitting one request.

Amortization of Contributions in Aid of Construction (CIAC)

Q: Why has the OUCC included amortization of CIAC to arrive at net operating income?

A: Pages 7-11 of this testimony sets out the OUCC's reasons for offsetting depreciation expense for the amount of depreciation associated with contributed property. This is an accounting entry to off-set the depreciation expense to the extent the assets were contributed. Depreciation is the return of the original cost of utility plant in service. The owners receive cash for depreciation expense as part of the revenue requirements for an investor-owned utility. The OUCC maintains that the owners should not receive a return of that plant which was contributed by others in exchange for the provision of utility service. Thus, by including the amortization of CIAC as an off-set to the depreciation expense, the consumers will reimburse over time the utility owners for only that portion of the utility plant in service that was provided by the utility owners. [10]

Taxes

Q: Please explain your adjustment to Utility Receipts Tax.

A: The Utility Receipts Tax adjustment to test year amounts is a product of the *pro forma* present rate gross receipts less bad debts expense multiplied by the tax rate of 1.4%. This resulted in a *pro forma* utility receipts tax expense under

[10] Financing and Charges for Wastewater Systems, WEF Manual of Practice No. 27, McGraw-Hill, 2005, pg 243. "Recovery of annual depreciation on assets that the owner did not supply the original investment fund, i.e., contributed property, would inappropriately enrich the owner. State regulated utilities must exclude recovery of annual depreciation on all contributed property, although these utilities own all of their assets regardless of original funding source."

Petitioner's current rates. The adjustment to the test year, therefore, is the test year expense subtracted from the calculated *pro forma* amount. Petitioner paid the Department of Revenue for several years of this tax during the test year, thus the high test year amount. The calculation for the adjustment to test year is found on Schedule 8, adjustment 11.

Q: State & Federal Income Taxes

A: *Pro forma* present rate Federal and State Income Tax adjustments are calculated on Schedule 8, adjustments 12 and 13 respectively. The gross revenue conversion factor found on Schedule 1, page 1 has been used to determine the adjustment necessary to increase taxes based on the increased revenues recommended.

Rate Structure - Sewer

Q: Do you have any concerns regarding Petitioner's current rate structure for its sewer utility?

A: Yes. As stated above, Petitioner's current pricing for sewer service is a flat rate. This pricing structure does not reward customers who conserve water and sewer services. Since Petitioner has the ability to apply volumetric rates to its sewer customers by using its own water usage data, the OUCC recommends Petitioner base its sewer rates on a volumetric charge. By linking the sewer service fees to water usage, consumers' will receive pricing signals that may promote more efficient use of water and wastewater services. Therefore, Petitioner should prepare a proposed volumetric rate for sewer service and present it to the commission.

Phased Rate Increase

Q: Has the Petitioner requested a second phase of rates?

A: The Petition filed September 26, 2006 did not mention a two-phased rate. However, according to pages 10 and 11 of Mr. Dryjanski's testimony, Petitioner is requesting a two-phased rate increase. To support its need for a two-phased rate increase Petitioner asserts that it anticipates spending $350,000 in water treatment plant improvements and $140,000 for two generators for the sewer collection system. The OUCC has found no further evidence that Petitioner is actually requesting a second phase to this proceeding or information we could rely on to even review Petitioner's request (such as the amount of the increase). Petitioner's "request" for a two-phased rate increase should not be considered by this Commission.

Recommendations

Q: Please summarize your recommendations.

A: The following are recommendations as provided in my testimony:

- Sewer rates should be based, at least in part, on volume of water used. Petitioner should present a proposal for a sewer rate design to be reviewed by the OUCC and the Commission.
- Amortization of Contributions in Aid of Construction should be recognized by the Commission.

- Water Utility rates should be increased by 19.35%.
- Sewer Utility rates should be decreased by 1.58%

Q: Does this conclude your testimony?

A: Yes

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Workpaper for pro forma Salaries (Allocated to Petitioner)

	Salaries		Payroll Taxes		Benefits	
	Water	Sewer	Water	Sewer	Water	Sewer
Test Year Salaries recorded by Petitioner	$154,311	$151,316	$12,795	$12,547	$28,057	$27,513
4% increase takes effect 4/1/07	6,172	6,053	512	502		
Pro forma amounts	$160,483	$157,369	$13,307	$13,049	$28,057	$27,513

STATE OF INDIANA

INDIANAPOLIS, 46204-2284

INDIANA UTILITY REGULATORY COMMISSION
913 STATE OFFICE BUILDING

December 28, 1987

TO: Michael Gallagher

FROM: for Jerry L. Webb, Chief Engineer Jeffrey R. Bailey

RE: Depreciation Rates

Effective January 1, 1988 the Engineering Division will be using the following depreciation rates for utilities:

1. Sewer Systems -

   a. With treatment plant: 2.5%
   b. Without treatment plant: 2.2%

2. Water Systems -

   a. Complete: 2.0%
   b. Purchase Water: 1.7%

3. Electric Systems -

   a. Non-Generating: 3.0%
   b. Generating: 3.3%

This memo supercedes our memos of February 22 and April 11, 1983 on the same subject however, only the water rates have been changed. The water depreciation rates have been revised as the result of a recently completed study of the water utilities' plant in service. Water utilities that have consistently completed depreciation studies as a part of their rate cases will be required to continue to do so.

JLW/ELM/vll

(all cc's receive attachment)
cc: Robert C. Glazier, Utilities Director
Thomas N. Martin, Assistant Chief Engineer
Jeffrey R. Bailey, Assistant Chief Engineer
Ethel L. Morgan, Principal Water Engineer
Lynne Miller, Principal Gas Engineer
Larry A. Brown, Principal Electric Engineer
Sandy Ibaugh, Principal Telephone Engineer
Bill D. Flohr, Staff Engineer
Dick Weigel, Staff Engineer
Karlette Fettig, Staff Engineer
Eric N. Wolf, Depreciation Analyst

file name: deprates

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION
913 STATE OFFICE BUILDING

INDIANAPOLIS, 46204-2284

November 4, 1987

MEMORANDUM

TO: Jerry L. Webb, Chief Engineer

THROUGH: Thomas N. Martin, Assistant Chief Engineer

FROM: Ethel L. Morgan, ELM Principal Water Engineer

RE: Composite Depreciation Rate for Water Utilities

The Water Section has recently completed a study of the water utilities to determine a reasonable and justifiable composite depreciation rate. The study included all water utilities, divided into customer groups of less than 5000, 5000 to 10,000, and over 10,000. Utilities that purchase fall only into the first group. Currently, staff is recommending 1.5% for utilities with their own source of supply, and 1.3% for utilities that purchase. My proposal is for staff to begin recommending a composite rate of 2% for utilities with their own source of supply and 1.7% for utilities that purchase based on the new study.

Data for the study was obtained from the 1985 and 1986 annual reports. Utility plant in service information was supplied by 223 utilities with their own source of supply, and 53 utilities that purchase. The study was not limited to the 486 utilities under the Commission's jurisdiction, but this figure can be used as a point of reference. The limiting factor in establishing a data base was reasonably accurate information on the annual reports.

To determine a composite depreciation rate for each account, service lives and salvage values were obtained from the NARUC "Depreciation Practices For Small Water Utilities" manual dated August 15, 1979. Where the NARUC manual gives a range for service lives, I have used the maximum life. Salvage values have been taken directly from the manual. A composite depreciation rate has been calculated for each utility in the study and for the "average" Indiana water utility. The figures for the average utility are calculated by summing the entries in each account and dividing by the total number of utilities. A separate average has been calculated for the utilities with less than 5,000 customers, less than 10,000 customers, greater than 10,000 customers, and for the utilities serving between 5,000 and 10,000 customers. There are only 2 utilities serving more than 5,000

customers that purchase water, and neither of them completed the annual report correctly. The last two pages of the attachment detailing utilities with their own source of supply include the utilities with greater than 5000 customers.

As can be seen by the attachment to this memo, the composite rate calculated for the average utility with its own source of supply is 2.03%, and the composite rate for the average utility that purchases is 1.66%. I propose that the Water Section begin recommending 2.0% for utilities with their own source of supply and 1.7% for utilities that purchase as appropriate in rate cases. If the recommendation is questioned, back-up data is available to justify the rate. Utilities that are currently using a rate larger than 1.5% will be required to use the depreciation rate recommended in their last rate case or complete a depreciation study to justify a new rate.

Attachment

ELM/vll

file name: MEMO

cc: Thomas N. Martin, Assistant Chief Engineer
Bill Flohr, Staff Engineer
Karlette Fettig, Staff Engineer
Dick Weigel, Staff Engineer
Eric Wolf, Depreciation Analyst

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

OUCC's Revenue Requirement
Water

Description:	Per Petitioner	Supplemental Petitioner	Per OUCC	OUCC More/(Less) from Pet. Suppl	Schedule Ref
Original Cost Rate Base	$1,694,936	$1,858,593	$2,178,679	$483,742	4w
Times: Weighted Cost of Capital	8.64%	8.64%	7.65%	-0.99%	5w
Net Operating Income Required	146,442	160,582	166,669	20,226	
Less: Adjusted Net Operating Income	(61,075)	(53,163)	72,211	133,286	6w
Amount to Balance to Petitioner's numbers	29	17			
Additional NOI Required	207,546	213,762	94,457	(113,089)	
Gross Revenue Conversion Factor	1.7562	1.81730	1.6933	(0.06294)	1w
Recommended Revenue Increase	$364,493	$388,470	$159,941	(204,552)	
Petitioner's Calculated Percentage Increase (data request #44)	45.33%	48.36%			
OUCC Percentage Increase - Calculated	45.32%	48.30%	19.35%	-25.97%	

Rate Impact - 13,500 gallons bimonthly:	Per	Supplemental	OUCC	OUCC
Current	Petitioner	Petitioner		More/(Less)
$43.74	$63.56	$64.89	$52.20	($11.36)
Avg. per month	$31.78	$32.44	$26.10	($5.68)

Gross Revenue Conversion Factor

	Description	Factor Proposed By Petitioner	Proposed Rates By Petitioner	Supplemental Petitioner	Factor Proposed By OUCC	Proposed Rates By OUCC
1	Gross Revenue Change	100.0000%	$364,493	$388,470	100.0000%	$159,941
2	Bad Debts Charge	0.5772%	2,104	2,242	0.5788%	926
3	Subtotal	99.4228%			99.4212%	
4	IURC Fee (2007 Fiscal Year Ending) 0.1062098%	0.1062%	387	413	0.1062%	170
5	Subtotal	99.3200%			99.3150%	
6	State Utility Receipts Tax (1.4% of line 3)	1.3919%	5,073	5,407	1.3919%	2,226
7	Subtotal	97.9300%			97.9231%	
8	State Adjusted Gross Receipts Tax (8.5%of line 5)	8.3241%	30,341	32,336	8.4418%	13,502
	Utility/Commission Tax (Pet. w/p [e]) (3.4% of line 7)	3.3296%	12,136			
	Unknown amount to balance (approx. 8% of revenue increase)			31,165		
9	Subtotal	86.2800%			89.4814%	
10	Federal Income Tax (at 34%)	29.3352%	106,925	113,959	30.4237%	48,660
11	Change In Operating Income	56.9400%	$207,527	$213,763	59.0577%	$94,457
12	Gross Revenue Conversion Factor	1.7562			1.6933	

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
WATER
Reconciliation of Net Operating Income Statement Adjustments

Description:	Per Petitioner	Supplemental Petitioner	Per OUCC	OUCC More/(Less) from Pet. Suppl
Operating Revenues:				
Water Revenues - Residential	($11,671)	$1,636	$2,677	$1,041
Total Operating Revenue	(11,671)	1,636	2,677	1,041
Operating Expenses:				
Salaries & Wages	66,704	66,704	6,172	(60,532)
Payroll Taxes	4,935	4,935	512	(4,423)
Employee Benefits	6,368	6,368	0	(6,368)
Operating Exp chgd to Plant	247	247	(677)	(924)
Consumer Price Index Increase	10,088	10,088	0	(10,088)
Amortization of Rate Case Expense	1,687	1,687	(12,287)	(13,975)
Meter Reading Allocation			(6,709)	(6,709)
Bad Debts Expense			91	91
IURC Fee			3	3
Utility Receipts Tax			(25,055)	(25,055)
Depreciation	13,784	18,104	(9,873)	(27,977)
Amortization of Contributions in Aid of Construction	0	0	(41,235)	(41,235)
Income Taxes - Federal	(112,491)	(111,638)	(53,314)	58,324
Income Taxes - State	(39,202)	(38,969)	(21,960)	17,009
Total Operating Expense	(47,880)	(42,474)	(164,332)	(121,859)
Total Net Operating Income Adjustments	$36,209	$44,110	$167,009	$122,899

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

OUCC's Revenue Requirement

Sewer

Description:	Per Petitioner	Supplemental Petitioner	Per OUCC	OUCC More/(Less)	Sch Ref
Original Cost Rate Base	$5,416,523	$5,530,819	$6,071,559	$540,740	4S
Times: Weighted Cost of Capital	8.64%	8.64%	7.65%	-0.99%	5S
Net Operating Income Required	467,988	477,863	464,474	(13,388)	
Less: Adjusted Net Operating Income	323,925	322,148	478,392	156,244	6S
Amount to Balance to Petitioner's numbers	114	115	0	(115)	
Additional NOI Required	144,177	155,830	(13,917)	(169,747)	
Times: Gross Revenue Conversion Factor	1.75630	1.75630	1.6933	(0.06305)	1S
Recommended Revenue Increase	$253,217	$273,684	($23,566)	(297,249)	
Petitioner's Calculated Percentage Increase (data request #44)	18.25%	19.73%			
OUCC Percentage Increase - Calculated			-1.58%	-21.31%	
Percentage Increase Requested	18.25%	19.73%	-1.58%		

Rate Impact	Current	Petitioner	Supplemental Petitioner	Per OUCC	OUCC More/(Less)
Residential (Flat Rate - bimonthly)	80.53	$95.23	$96.42		-$17.87
Commercial	200% of Water bill				
13,500 bi-monthly gallons				$78.55	

Gross Revenue Conversion Factor

	Description		Factor Proposed By Petitioner	Proposed Rates By Petitioner	Supplemental Petitioner	Factor Proposed By OUCC	Proposed Rates By OUCC
1	Gross Revenue Change		100.0000%	$253,217	$273,684	100.0000%	($23,566)
2	Bad Debts Charge		0.5772%	1,462	1,580	0.5784%	(136)
3	Subtotal		99.4228%			99.4216%	
4	IURC Fee (2007 Fiscal Year Ending)	0.1062%	0.1062%	269	291	0.1062%	(25)
5	Subtotal		99.3166%			99.3154%	
6	State Utility Receipts Tax (1.4% of line 3)		1.3919%	$3,524.58	3,809	1.3919%	(328)
7	Subtotal		97.9247%			97.9235%	
8	State Adjusted Gross Receipts Tax (8.5%of line 5)		8.3236%	$21,076.79	22,780	8.4418%	(1,989)
	Utility/Commission Tax (Pet. w/p [e]) (3.4% of line 7)		3.3294%	$8,430.72	9,112		
	Unknown amount to balance (approx. 8% of revenue increase)						
9	Subtotal		86.2716%			89.4817%	
10	Federal Income Tax (at 34%)		29.3324%	$74,274.61	80,278	30.4238%	(7,170)
11	Change In Operating Income		56.9393%			59.0579%	($13,917)
12	Gross Revenue Conversion Factor		1.7563			1.6933	

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
Sewer
Reconciliation of Net Operating Income Statement Adjustments

Description:	Per Petitioner	Supplemental Petitioner	Per OUCC	OUCC More/(Less)
Operating Revenues:				
Sewer Revenues - Residential	($20,613)	($20,613)	($18,680)	$1,933
Total Operating Revenue	(20,613)	(20,613)	(18,680)	$1,933
Operating Expenses:				
Salaries & Wages	65,434	65,434	6,053	($59,381)
Payroll Taxes	4,841	4,841	502	(4,339)
Employee Benefits	6,249	6,249	0	(6,249)
Operating Expense chgd to Plant	242	242	(664)	(906)
Consumer Price Index Increase	8,431	8,431	0	(8,431)
Amortization of Rate Case Expense	1,655	1,655	(12,049)	(13,704)
Meter Reading Allocation			6,709	6,709
Bad Debts Expense			197	197
IURC Fee			(20)	(20)
Utility Receipts Tax			(45,302)	(45,302)
Depreciation	15,398	21,352	(6,543)	(27,895)
Amortization of CIAC			(78,426)	(78,426)
Income Taxes - Federal	(23,171)	(26,481)	35,224	61,705
Income Taxes - State	(22,119)	(22,998)	(3,738)	19,260
Total Operating Expense	56,960	58,725	(98,058)	(156,783)
Total Net Operating Income Adjustments	($77,573)	($79,338)	$79,378	$158,715

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Balance Sheet as of June 30, 2006

Assets and Other Debits:			
Fixed Assets:	Water	Sewer	Combined
Utility Plant In Service	$5,113,324	$11,649,676	$16,763,000
Less: Accumulated Depreciation	1,200,765	2,652,667	3,853,432
Net Utility Plant In Service	3,912,559	8,997,009	12,909,568
Acquisition Adjustment	0	0	0
Accum. Amortization of Acquisition Adj.	0	0	0
Construction Work In Progress	38,805	225	39,030
Total Utility Plant In Service	3,951,364	8,997,234	12,948,598
Abandoned Plant			0
Total Plant	3,951,364	8,997,234	12,948,598
Other Assets and Investments	0	0	0
Current and Accrued Assets:			
Cash and Cash Equivalents			265
Accounts Receivable			423,487
Accounts Receivable - Other			
Amortizable Expenses			
Inventory			
Prepaid Taxes			
Total Current and Accrued Assets	0	0	423,752
Deferred Debits:			
Deferred Rate Case Expense (net of Amc	19,698	19,316	39,014
Deferred Tank Mtnce Exp (Net of Amort	86,945		86,945
Deferred Jetting Sewer Mains (Net of Amort)		6,723	6,723
Total Assets and Other Debits	$4,058,007	$9,023,273	$13,505,032

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Balance Sheet as of June 30, 2006

Liabilities and Stockholders Equity:	Water	Sewer	Combined
Stockholders Equity:			
Common Stock			$ 7,139,647
Undistributed Earnings			5,575,650
Current Income			
Total Stockholders Equity			12,715,297
Long Term Debt			
Total Long Term Liabilities	-	-	-
Current and Accrued Liabilities:			
Accounts Payable			8,830
Accounts Payable -Assoc. Companies			(6,349,826)
Customer Deposits			1,515
Customer Deposits - interest			3,453
Accrued Taxes - Indiana Gross			
Accrued Property Taxes			427,439
Accrued Taxes - Indiana Sales Tax			
Accrued Taxes - Federal Income Tax			
Accrued Interest			
Total Current and Accrued Liabilities			(5,908,589)
Deferred Credits:			
Unamortized ITC			82,913
Deferred Tax - Federal			881,023
Deferred Tax - State			(52,852)
Total Deferred Credits			911,084
Contribution In Aid Of Construction - Water	2,058,911		2,058,911
Contribution In Aid Of Construction - Sewer		3,730,294	3,730,294
Total Liabilities and Stockholders Equity	$ -	$ 3,730,294	$ 13,506,997

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Income Statement For The Year Ended June 30, 2006

Operating Revenues:	Water	Sewer	Total
Water/Sewer Revenues Residential	$ 815,906	$1,504,196	$2,320,102
Water/Sewer Revenues Commercial			0
Late Fees	7,814	7,662	15,476
Miscellaneous Revenues	(18)	(17)	(35)
Connection Meter Fees	227	223	450
New Customer Charge	3,282	3,218	6,500
NSF Charge	121	119	240
Cut-off Charge	290	285	575
Total Operating Revenues	823,702	1,515,685	2,343,308
Operating Expenses:			
Salaries and Wages	154,311	$151,316	305,627
Payroll Taxes (from pet wkp [e] on taxes)	12,795	12,547	25,342
Pension & Other Benefits	28,057	27,513	55,570
Purchased Power	108,298	66,327	174,625
Maintenance & Repair	73,835	78,118	151,953
Maintenance Testing	8,134	33,366	41,500
Meter Reading	13,550	0	13,550
Chemicals	19,344	18,968	38,312
Transportation	24,134	23,665	47,799
Operating Expense charged to Plant	(19,758)	(19,375)	(39,133)
Outside Services - Other	7,787	7,636	15,423
Office Supplies & Other Office Expenses	13,869	13,600	27,469
Rent	133	130	263
Insurance	21,209	20,797	42,006
Office Utilities	8,008	7,853	15,861
Regulatory Commission Expense (42488 rate case amort)	22,894	22,449	45,343
Uncollectible Accounts	4,647	8,395	13,042
Miscellaneous	(15,914)	(15,605)	(31,519)
Total Operations and Maintenance Expenses	485,333	457,700	943,033
Depreciation	116,923	257,706	374,629
Amortization of CIAC	0	0	0
Net Operating Income Before Income Taxes	221,446	800,279	1,021,726
Taxes other than Income:			
Utility/Commission Tax	879	1,588	2,467
Property and other general taxes (Corp)	94,625	92,789	187,414
Real Estate Tax	10,015	9,820	19,835
Personal Property Tax	109,482	107,357	216,839
Utility Receipts Tax	36,606	66,133	102,739
Franchise Tax (SOS report)	2	2	4
Amortization of Investment tax credit	(567)	(1,304)	(1,871)
Income Taxes - Federal	47,640	86,067	133,707
Income Taxes - State	21,483	38,813	60,296
Total Operating Expenses	791,189	1,116,671	433,148
Net Income from operations	$ 32,513	$ 399,014	$431,527
Other Deductions:			
Interest during construction	303	696	999
Interest on Debt	83,215	191,852	275,067
Net Corporate Income	(51,005)	206,466	155,461

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
Water
Calculation of Rate Base as of June 30, 2006
Updated Through December 31, 2006

	6/30/06 Petitioner	Supplemental Petitioner	OUCC
Description:			
Utility Plant In Service as of 6/30/06	$5,113,324	$5,113,324	$5,113,324
UPIS items added 7/1/06 - 12/31/06 posted to books		$209,419	$209,419
Less: Accumulated Depreciation	1,200,765	1,200,765	1,200,765
Net Utility Plant in Service 6/30/06	3,912,559	$4,121,978	$4,121,978
Add: Capital items Added 7/1/06 - 12/31/06 net of retirements (not posted to books)	90,311	121,069	121,069
Additions through March 2007 (General Ledger Additio	84,849	0	
Less: Additional Depreciation through 12/31/06 (6 months)	(32,519)	(39,896)	53,525
Contributions in Aid of Construction	2,058,911	2,061,761	2,061,761
Accumulated Amortization of CIAC			(475,043)
Deferred Income Taxes	434,749	430,948	430,947
Unamortized Income Tax Credits			41,863
Customer Deposits	765	765	765
Total Net Utility Plant In Service	1,625,813	1,789,469	2,129,229
Add: Working Capital (See Below)	68,749	69,124	49,449
Total Original Cost Rate Base	$1,694,562	$1,858,593	$2,178,679

Working Capital Calculation

Description			
Pro-forma Present Rate Operations and Maintenance Expense	$572,365		467,698
Less: Payroll Taxes	17,730		13,307
Less: Bad Debts (Uncollectable Accounts) Expense	4,647		4,647
Less: Purchased Power			54,149
Adjusted Operation and Maintenance Expense	549,988		395,595
Times: 45 day method	0.125		0.125
Working Capital Requirement	$68,749		$49,449

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
Sewer
Calculation of Rate Base as of June 30, 2006
Updated Through December 31, 2006

	6/30/06 Petitioner	12/31/06 Petitioner	Per OUCC
Description:			
Utility Plant In Service as of 6/30/06	$11,649,676	$11,649,676	$11,649,676
UPIS items added 7/1/06 - 12/31/06 posted to books		$382,124	$382,124
Less: Accumulated Depreciation	2,652,667	2,652,667	2,652,667
Net Utility Plant in Service 6/30/06	8,997,009	9,379,133	9,379,133
Add: Capital items Added 7/1/06 - 12/31/06 net of retirements (not posted to books)	66,026	77,907	77,907
Additions through March 2007 (General Ledger Additions)	164,256	0	
Less: Additional Depreciation assets through 12/31/06 (6 months)	(248,854)	(133,990)	125,581
Contributions in Aid of Construction	3,730,294	3,734,590	3,734,590
Accumulated Amortization of CIAC			(856,802)
Deferred Income Taxes (69.18%)	393,422	389,717	389,717
Unamortized Income Tax Credits			41,050
Customer Deposits	750	750	750
Total Net Utility Plant In Service	5,351,679	5,465,973	6,022,153
Add: Working Capital (See Below)	64,846	64,846	49,406
Total Original Cost Rate Base	$5,416,525	$5,530,819	$6,071,559

Working Capital Calculation

Description			
Pro-forma Present Rate Operations and Maintenance Expense	$544,552		$449,856
Less: Payroll Taxes	17,388		13,049
Less: Bad Debts (Uncollectable Accounts) Expense	8,395		8,395
Less: Purchased Power			33,164
Adjusted Operation and Maintenance Expense	518,769		395,248
Times: 45 day method	0.125		0.125
Working Capital Requirement	$64,846		$49,406

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Capital Structure

Description	Amount	Percent of Total	Cost	Weighted Cost
Utilities, Inc. & Subsidiaries				
Common Equity	129,744,867	41.89%	**9.15%**	3.83%
Long Term Debt	180,000,000	58.11%	6.58%	3.82%
Total	309,744,867	100.00%		7.65%

Synchronized Interest Calculation
Water

Description:	As Of 12/31/2006
Total Original Cost Rate Base-See Sch. 4W	$2,178,679
Times: Weighted Cost of Debt	3.82%
Synchronized Interest Expense	$83,226

Synchronized Interest Calculation
Sewer

Description:	As Of 12/31/2006
Total Original Cost Rate Base-See Sch. 4S	$6,071,559
Times: Weighted Cost of Debt	3.82%
Synchronized Interest Expense	$231,934

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
WATER
Pro-forma Net Operating Income Statement

Description:	Year Ending 6/30/06	Adjustments	Sch. Ref.	Pro-forma Present Rates	Adjustments	Sch. Ref.	Pro-forma Proposed Rates
Operating Revenues:							
Water Revenues Residential	$802,917	$1,636	7-1	$ 805,594	$155,915	1	$961,509
		$1,040	7-2				
Water Revenues Commercial	12,989			12,989	2,514	1	15,503
Late Fees	7,814			7,814	1,512	1	9,326
Miscellaneous Revenues	(18)			(18)			(18)
Connection Meter Fees	227			227			227
New Customer Charge	3,282			3,282			3,282
NSF Charge	121			121			121
Cut-off Charge	290			290			290
Total Operating Revenues	827,623	2,677		830,300	159,941		990,241
Operating Expenses:							
Operations and Maintenance	480,686			467,698			467,698
Salaries & Wages		6,172	8-1				
Payroll Taxes		512	8-2				
Employee Benefits		0	8-3				
Operating Exp chgd to Plant		(677)	8-4				
Amortization of Rate Case Expense		(12,287)	8-6				
Meter Reading		(6,709)	8-7				
Bad Debts Expense	4,647	91	8-5	4,738	926	1	5,663
Taxes other than Income:							
Utility/Commission Tax	879	3	8-7	882	170	1	1,052
Property and other general taxes (Corp)	94,625			94,625			94,625
Real Estate Tax	10,015			10,015			10,015
Personal Property Tax	109,482			109,482			109,482
Utility Reeeipts Tax	36,606	(25,055)	8-10	11,551	2,226	1	13,777
Franchise Tax (SOS report)	2			2			2
Depreciation	116,923	(9,873)	8-8	107,050			107,050
Amortization of CIAC	0	(41,235)	8-9	(41,235)			(41,235)
Amortized Investment Tax Credit	(567)			(567)			(567)
Income Taxes - Federal	47,640	(53,314)	8-11	(5,674)	48,660	1	42,986
Income Taxes - State	21,483	(21,960)	8-12	(477)	13,502	1	13,025
Total Operating Expenses	922,420	(164,332)		758,088	65,484		823,572
Net Operating Income	($94,797)	$167,009		$72,211	$94,457		$166,669

TWIN LAKES UTILITIES, INC
CAUSE NO. 43128
SEWER
Pro-forma Net Operating Income Statement

Description:	Year Ending 6/30/2006	Adjustments	Sch. Ref.	Pro-forma Present Rates	Adjustments	Sch. Ref.	Pro-forma Proposed Rates
Operating Revenues:							
Sewer Revenues - Residential	$1,451,388	($20,613)	7-1	$ 1,432,708	($22,611)	I	$1,410,097
		1,933	7-2				
Sewer Revenues - Commercial	52,808			52,808	(833)	I	51,975
Late Fees	7,662			7,662	(121)	I	7,541
Miscellaneous Revenues	(17)			(17)			(17)
Connection Meter Fees	223			223			223
New Customer Charge	3,218			3,218			3,218
NSF Charge	119			119			119
Cut-off Charge	285			285			285
Total Operating Revenues	1,515,685	(18,680)		1,497,005	(23,566)		1,473,440
Operating Expenses:							
Operations and Maintenance	449,305			449,856			449,856
Salaries & Wages		6,053	8-1				
Payroll Taxes		502	8-2				
Employee Benefits		0	8-3				
Operating Expense chgd to Plant		(664)	8-4				
Amortization of Rate Case Expense		(12,049)	8-6				
Meter Reading		6,709	8-7				
Bad Debts Expense	8,395	197	8-5	8,592	(136)	I	8,456
IURC Fee							
Taxes other than Income:							
Utility/Commission Tax	1,588	(20)	8-8	1,568	(25)	I	1,543
Property and other general taxes (what is this?)	92,789			92,789			92,789
Real Estate Tax	9,820			9,820			9,820
Personal Property Tax	107,357			107,357			107,357
Utility Receipts Tax	66,133	(45,302)	8-11	20,831	(328)	I	20,503
Franchise Tax (SOS report)	2			2			2
Depreciation	257,706	(6,543)	8-8	251,163			251,163
Amortization of CIAC	0	(78,426)	8-10	(78,426)			(78,426)
Amortized Investment Tax Credit	(1,304)			(1,304)			(1,304)
Income Taxes - Federal	86,067	35,224	8-12	121,291	(7,170)	I	114,122
Income Taxes - State	38,813	(3,738)	8-13	35,075	(1,989)	I	33,085
Total Operating Expenses	1,116,671	(98,058)		1,018,613	(9,648)		1,008,965
Net Operating Income	$399,014	$79,378		$478,392	($13,917)		$464,474

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Revenue Adjustments

(1)
Customer Normalization

To adjust test year residential revenue for customer additions during the test year (7/1/05 - 6/30/06).

	Water	Sewer
Pro forma	$817,542	$1,483,583
Less Test Year (sch 2)	815,906	1,504,196
Adjustment - Increase	$1,636	($20,613)

(2)
Customer Growth Revenue Updated to December 31, 2006

To adjust for growth through December 31, 2006 (Source: Data Request Response)

Residential		Water	Sewer
Customers as of 12/31/06		3,070	3,058
Less Customers as of 06/30/06		3,066	3,054
Growth since test year		4	4
Times Average Bill (annual):			
Avg Bi-monthly usage (1,000 gallons)	13.33		
Bill for avg gallons (13.33 * 2.27)+13.09	$43.35		
Times Six billings per year	x 6		
Annual average residential - current price		$260.10	$483.18
Revenue Adjustment based on Fixed, Known, Measurable Growth		$1,040	$1,933

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
WATER & SEWER
Expense Adjustments

(1)
Wages

To adjust labor expense to for 4% pay raise to take effect 4/1/07.

	Alloc to Twin Lakes	50.49% Water	49.51% Sewer
Pro forma Salaries & Wages, as allocated	$317,852	$160,483	$157,369
Less: Test Year Expense	305,627	154,311	151,316
Adjustment - Increase	$12,225	$6,172	$6,053

(2)
Payroll Tax

To adjust payroll tax to pro forma levels.

	Alloc. To Twin L	50.49% Water	49.51% Sewer
Pro Forma Payroll Taxes	$26,356	$13,307	$13,049
Less: Test Year Payroll Taxes Expense	25,342	12,795	12,547
Adjustment - Increase	$1,014	$512	$502

(3)
Employee Benefits

Adjust benefit to pro forma amount

	Alloc. To Twin Lakes	$ Benefits to Twin Lakes Water 50.49%	Sewer 49.51%
Benefits allocated to water and sewer	$55,570	$28,057	$27,513
Less Test Year Expense	55,570	28,057	27,513
Adjustment to test year expense	$0	$0	$0

(4)
Capitalized Payroll, Payroll Taxes and Benefits

Adjust Operating Expense for amount of payroll and payroll related expense items anticipated to be capitalized. (Based on capitalization ratios from test year)

Test year operating expense charged to plant in test year (Petitioner's schedule B, page 1 of 4 "Per Books")	($39,133)
Divide by test year salaries, taxes, and benefits (Petitioner's schedule B, page 1 of 4 "Per Books")	386,539
Percentage of test year salaries, taxes and benefits that were capitalized.	-10.12%
Pro Forma salary, taxes and benefits (#1,2 & 3 above)	$399,778
Times capitalization percentage from above	-10.12%
Pro forma capitalized payroll, payroll taxes and benefits	($40,473)

	Total	Water 50.49%	Sewer 49.51%
Pro forma	($40,473)	($20,435)	($20,038)
Less test year	($39,133)	($19,758)	($19,375)
Adjustment to test year	($1,340)	($677)	($664)

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
WATER & SEWER
Expense Adjustments

(5)
Bad Debts Expense

	Water	Sewer
Test Year rate revenue	$802,917	$1,451,388
Test Year Bad Debts (Uncollectible Accounts)	4,647	8,395
Uncollectible Percentage Calculated	0.5788%	0.5784%
	Pro Forma Current Rates	
Pro Forma Revenue	818,583	1,485,516
Times Uncollectible Percentage above	0.5788%	0.5784%
Pro Forma Proposed bad debts (uncollectible Accounts)	4,738	8,592
Less: Pro Forma Proposed bad debts	4,647	8,395
Adjustment - Increase	91	197

(6)
Rate Case Amortization

To adjust for unamortized rate case expense.

	Total	50.49% Water	49.51% Sewer
Legal Fees (Clayton Miller - Bakers & Daniels, LLP)	**$30,000**	**$15,147**	**$14,853**
Customer Notice:			
Postage (3,104 notices x 39¢)	1,211	611	599
Paper Stock (3,104 notices x .0526¢)	163	82	81
	1,374	**694**	**680**
Travel			
Gasoline (xxx miles * $2.50/gal ⁄ 20 mpg)	72	36	35
Hotel/Accomodations (2 people @$120 per night x 4 nights)	960	485	475
Rental Cars ($200 per trip x 2 trips)	400	202	198
	1,432	**723**	**709**

Water Service Co. Personnel:	Hrs	rate	Amount$		
Steve Lubertozzi	30	$89	$2,670	1,348	1,322
K. Wentz	25	45	1,125	568	557
Michael Dryjanski	200	57	11,400	5,756	5,644
LS	100	43	4,300	2,171	2,129
LY	40	25	1,000	505	495
MM	40	34	1,360	687	673
JB	40	29	1,160	586	574
Total WSC Personel			**23,015**	**11,620**	**11,395**
Cost of Capital Witness (P. Ahern)			**7,000**	**3,534**	**3,466**
Costs of Mailing and Copies			**200**	**101**	**99**

Unamortized amount of prior rate case expense (the balance will be fully amortized in April, 2007)

Cost of current and unamortized rate case expense	63,020	31,819	31,201
Amortized over 3 years	3	3	3
pro forma proposed rate case expense	21,007	10,606	10,400
Less: Test Year	45,343	22,894	22,449
Adjustment - Decrease	$ (24,336)	$ (12,287)	$ (12,049)

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
WATER & SEWER
Expense Adjustments

(7)
Meter Reading Allocation

To spread meter reading expenses between water and sewer utilities. This adjustment reflects OUCC recommendation to charge for sewer service based on metered water usage.

	50.49% Water	49.51% Sewer
Pro Forma Meter Reading expense (based on test year total amount)	$6,841	$6,709
Less Test Year	13,550	0
Adjustment - Increase/(Decrease)	($6,709)	$6,709

(8)
IURC Fee

To normalize Utility Regulatory Commission Fees.

	Water	Sewer
Additional Revenues	2,677	($18,680)
Rate 0.1062098%	0.1062098%	0.1062098%
Adjustment - Increase (decrease)	$2.84	($19.84)

(9)
Depreciation Expense

To update depreciation expense, reflecting additional plant and authorized depreciation rates.

	Water	Sewer
Utility Plant in Service per books - 06/30/06	$5,113,324	$11,649,676
Add: Assets placed in service from 7/1/06 through 12/31/06	330,488	460,031
Less: Land	91,290	149,576
Total Depreciable Plant in Service	5,352,522	11,960,131
Depreciation Rate (Composite Rate approved by Commission)	2.00%	2.10%
Pro-Forma Plant Depreciation expense	107,050	251,163
Less: Test Year	116,923	257,706
Adjustment - Decrease	($9,873)	($6,543)

(10)
Amortization of CIAC

To amortize Contributions in Aid of Construction.

	Water	Sewer
CIAC per books 12/31/06 (credit balance)	($2,061,761)	($3,734,590)
Times depreciation rate of assets	2.00%	2.10%
Amortization of CIAC	($41,235)	($78,426)
Less: Test Year	$0	$0
Adjustment - Decrease Expense	($41,235)	($78,426)

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128
WATER & SEWER
Expense Adjustments

(11)
Utility Receipts Tax

To adjust taxes to current conditions.

WATER	Pro Forma Gross Receipts	Less Bad Debts	Less 1/2 of $1000 exemption	Taxable Amount	Times Rate	Adjustment
Utility Receipts Tax	$830,300	4,738	$500	$825,062	1.40%	$11,551
Less: Test Year						36,606
Adjustment - Decrease						($25,055)

SEWER	Pro Forma Gross Receipts	Less Bad Debts	Less 1/2 of $1000 exemption	Taxable Amount	Times Rate	Adjustment
Utility Receipts Tax	$1,497,005	8,592	$500	$1,487,913	1.40%	$20,831
Less: Test Year						66,133
Adjustment - Decrease						($45,302)

(12)
Federal Income Taxes

To adjust Federal Income Taxes to Pro-forma Present Rate amount.

	Water Pro-Forma Present Rates	Sewer Pro-Forma Present Rates
Total Revenue	$ 830,300	$1,497,005
Less:		
Operation & Maintenance Expenses	467,698	449,856
Bad Debts Expense	4,738	8,592
Synchronized Interest	83,226	231,934
Depreciation & Amortization	65,248	171,432
Taxes other than Income (other than URT)	215,005	222,547
Net income before income taxes	(5,615)	412,644
Indiana Utility Receipts Tax	11,551	20,831
Indiana Adjusted Gross Income Tax	(477)	35,075
Federal Taxable Income	(16,688)	356,738
Federal Tax Rate	34.00%	34.00%
Sub-total Pro Forma Present Rates Federal Income Taxes	(5,674)	121,291
Less: Test Year	47,640	86,067
Adjustment - Increase (decrease)	$ (53,314)	$ 35,224

(13)
State Income Tax

To adjust State Income Taxes to Pro-forma Present Rate amount.

	Water Pro-Forma Present Rates	Sewer Pro-Forma Present Rates
Federal Taxable Income	(16,688)	356,738
Add: Taxes Based on Income:		
Utility Receipts Tax	11,551	20,831
State Adjusted Gross Income Tax	(477)	35,075
State Taxable Income	(5,615)	412,644
Rate	8.50%	8.50%
Indiana Adjusted Gross Income Tax	(477)	35,075
Less: Test Year	21,483	38,813
Adjustment - Increase (decrease)	$ (21,960)	$ (3,738)

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Water
Current and proposed rates

Base Facility Charge

Meter Size		Current Rates Base Facility Charge	Petitioner Proposed Base Facility Charge	OUCC Base Facility Charge
5/8" & 3/4"		$13.09	$19.02	$15.62
1"		32.72	47.55	39.05
1 1/2"		65.44	95.10	78.11
2"		104.71	152.17	124.98
3"	not currently needed		0.00	0.00
4"	not currently needed		0.00	0.00
6"	not currently needed		0.00	0.00

Volume Charge

	Current Rates	Petitioner Proposed	OUCC
Per 1,000 gallons	$2.27	$3.30	$2.71

billed bi-monthly

Unmetered Water Service

	Current Rates	Petitioner Proposed	OUCC
Flat rate for unmetered public drinking fountain	$34.47	$50.09	$41.14

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Service Charges

	Current Rates	Petitioner Proposed	OUCC
New Customer charge	$20.00	$20.00	$20.00
NSF check charge	$10.00	$10.00	$10.00
Meter fee (Outside Reader)	$35.00	$35.00	$35.00
Reconnection charge:			
If service is disconnected by the Company for good cause	$25.00	$25.00	$25.00
If service is disconnected at the customer's request	$25.00	$25.00	$25.00
(plus the base facility charge for the period of disconnection if the customer asks to be reconnected within 9 months of disconnection)			
Connection Charge (in addition to new customer charge):			
Residential	$475	$475	$475
Commercial (5/8" meter)	$475	$475	$475
Commercial (larger than 5/8" meter)	Greater of $475 or actual cost of meter and installation		

TWIN LAKES UTILITIES, INC.
CAUSE NO. 43128

Sewer
Current and Proposed Rates

	Current Rates	Petitioner Proposed	OUCC
Flat Rate Sewer - Residential	$80.53	$95.23	
Metered Rate - all volumetric - per 1,000 gallons *			$5.82
Commercial - minimum	$73.82	$94.55	
Commercial - above minimum	200% of water bill		

Billings are bi-monthly

Service Charges

	Current Rates	Petitioner Proposed	OUCC Proposed
New Customer charge	$20.00	$20.00	$20.00
NSF check charge	$10.00	$10.00	$10.00

Reconnection charge:

Actual cost of disconnection and reconnection, the estimated cost of whch will be furnished to customer with cut-off notice

Connection Charge (in addition to new customer charge):			
Residential	$716	$716	$716
Commercial (5/8" meter)	$716	$716	$716
Commercial (larger than 5/8" meter)	Greater of $716 or actual cost of meter and installation		

* *Calculation of Per 1,000 gallon charge:*

Revenue requirements for sewer utility (Schedule 6S)	*$1,462,071*
Divide by total gallons (per Petitioner's consdumption support)	*251,289,064*
price per gallon	*$0.00582*
price per 1,000 gallon	*$5.82*

TESTIMONY OF ROGER A. PETTIJOHN
CAUSE NO. 43128
TWIN LAKES UTILITIES, INC.

Introduction

Q: Please state your name and business address.

A: My name is Roger A. Pettijohn and my business address is Indiana Government Center North, 100 North Senate Avenue, Room N501, Indianapolis, Indiana 46204.

Q: By whom and in what capacity are you employed?

A: I am employed by the Office of Utility Consumer Counselor (OUCC) as a Senior Utility Analyst for the Water/Wastewater Division.

Q: What are the duties and responsibilities of your current position?

A: As a Senior Analyst for the Water/Wastewater Division of the OUCC, I am responsible for evaluating the condition, operation, and project improvements proposed by investor owned, municipal, and not-for-profit water and sewer utilities.

Q: What is your professional background and experience?

A: After teaching several years for the Department of Defense Dependents Schools, I accepted an administrative position as Utility Director for the City of Elwood, Indiana in 1976. Subsequently, I assumed the responsibilities of operator in charge of the water and wastewater facilities. In 1980, I accepted a position as Waterworks Superintendent for the City of Marion, Indiana. After taking early

retirement from the City of Marion in 1995, I served as a project manager and salesman for a firm representing various manufacturing companies in the business of providing water and wastewater treatment equipment to municipalities and industry. I currently maintain a Class I Wastewater Treatment License, as well as a Water Treatment System 3 and System 5 designation (WTS-3) (WTS-5) which are ground and surface water treatment plant certifications respectively, and a Distribution Large (DS-L) license all issued by the State of Indiana.

Q: Have you previously testified before the Commission?

A: Yes, both on behalf of utilities and as an analyst for the Office of the Utility Consumer Counselor (OUCC).

Q: What investigations have you performed in this Cause?

A: I have toured parts of Petitioner's treatment facilities and had discussions with Mr. Paul Burris, Regional Vice President of Utilities, Inc. and Mr. Christopher Montgomery, Area Manager for Twin Lakes Utilities. The discussions involved Petitioner's compliance with the Commission's Order in Cause No. 42488, dated March 31, 2004 and also prospective improvements in the area of service quality issues. I have participated in the crafting of discovery questions and reviewed responses to the OUCC's data requests as well as responses to data requests sent by Intervenor.

Q: What is the purpose of your Testimony?

A: The purpose of my testimony is to respond to the testimony of Mr. Montgomery and also to review Petitioner's compliance with the Commission's Order in its last

rate case (Cause No. 42488). In addition, I will address some of the customer service concerns expressed at the Twin Lakes Public Field Hearing of February 6, 2007 as well as resulting discussions with Petitioner.

Cause No. 42488

Q: What sections of the Final Order in Cause No. 42488 are pertinent to your testimony?

A: The focus of my testimony relate to ordering paragraphs 3, 4, 5, and 6 of the Final Order.

Q: What did the Commission require in ordering paragraph 3?

A: Ordering paragraph 3 stated the following:

> Twin Lakes shall file quarterly reports with this Commission's Gas/Water/Sewer Division within 30 days of the end of each quarter through 2007 concerning its inflow and infiltration program, and should serve copies of such reports on the OUCC and Intervener.

Q: Did Twin Lakes comply with this requirement?

A: Yes. Petitioner filed quarterly reports in compliance with ordering paragraph 3. Mr. Montgomery lists, in Exhibit CKM-3, evidence of Inflow and Infiltration (I&I) remediation costs as required in ordering paragraph 3 above. Petitioner has been required to invest at least $500,000 in aggregate over years 2003 thru 2007 to further diagnose and remediate I&I problems. The most recent I&I remediation reports received by the OUCC shows $570,288.87 being spent through the 4th quarter of 2006 (See RAP Attachment 1).

Q: What did the Commission require in ordering paragraph 4?

A: Ordering paragraph 4 stated the following:

> Twin Lakes shall comply with Finding Paragraph No. 4.g. of the Order and the related provision of the Settlement Agreement, which may require Petitioner to file an amended rate schedule under certain circumstances.

In paragraph 4.g., the Commission noted that Twin Lakes agreed to a three-year amortization of its rate case expenses in Cause No. 42488 and further that the intent was that Twin Lakes recover the entire amount of its rate case expense, but no more. The parties agreed that in the event Twin Lakes does not commence a rate proceeding with respect to its water and sewer rates within three years after the effective date of the final order in this Cause, Twin Lakes would file an amended rate schedule designed to decrease its water revenues by $10,370 and its sewer revenues by $10,226.

Q: How did Twin Lakes respond to this requirement?

A: Twin Lakes filed its rate case within three years of the final order issued in Cause No. 42488, which was approved on March 31, 2004.

Q: What did the Commission require in ordering paragraph 5?

A: Ordering paragraph 5 stated the following:

> Twin Lakes shall distribute to its customers the annual Notice required in Finding Paragraph No. 5 and shall annually file with the Commission, the OUCC and Intervenor evidence of continuing compliance with the requirement.

Q: Did Twin Lakes comply with this requirement?

A: Yes. Petitioner has distributed to its customers the annual Notice as required.

Mr. Montgomery submitted Exhibit CKM-1 as evidence of its "Notice" advising customers of "grievance and complaint mechanisms available to them and suboptimal handling of customer complaints."

Q: What did the Commission require in ordering paragraph 6?

A: Ordering paragraph 6 stated the following:

> Twin Lakes shall submit quarterly summaries of consumer complaints with the Commission's Consumer Affairs Division, as directed in Finding Paragraph No. 5.

Q: How did Twin Lakes respond to this requirement?

A: Petitioner's Exhibit CKM-2 is evidence of its filing customer complaints and quarterly submissions of complaints to the Commission's Consumer Affairs Division.

Q: Has Petitioner substantially complied with the preceding Ordering paragraphs?

A: Yes. However, I&I quarterly remediation reporting as well as customers disposition of complaints are required to be continued through the fourth quarter of 2007 and also served on the OUCC and Intervenor (Final Order, Cause No. 42488, March 31, 2004, page 4).

Cause No. 43128

Water System:

Q: What are Petitioner's water system characteristics?

A: Petitioner has seven (7) deep wells with capacities from approximately 100 gallons per minute (gpm) to a high of 300 gpm. The wells pump either to a 1.152

million gallon per day (mgd) gravity filtration plant or to a .500 mgd pressure filtration plant. At the treatment plants, Petitioner adds chlorine for disinfection and fluoride for dental health. Total water storage of 700,000 gallons consists of a 500,000 gallon steel ground reservoir and a 200,000 gallon steel elevated tank. The wells and plants have auxiliary power. Twin Lakes serves approximately 3,100 customers and pumps on average approximately 520,000 gallons per day. In a discovery response (OUCC's Q-32), Mr. Montgomery advised that customer growth over the last four (4) years is approximately 9%.

Q: Is Twin Lake's water system operating adequately?

A: Petitioner meets recommended one day "10 States" standard for storage, excluding fire flow consideration, as well as meeting system demand for both well and high lift pumping capacities with its largest pumping unit out of service. Twin Lakes has been operating and reporting its Water Utility without violation or incident from IDEM. Further, Petitioner's maintenance records indicate it closely monitors, cleans, and repairs its wells. However, source of supply or well capacity continues to be a concern.

Q: Please explain your concerns about the water supply and well capacity.

A: Petitioner's aquifers appear to be only marginally sufficient to meet current demand and will prove less so as demand increases. Many water works in Indiana do not develop or retain wells that yield only 100 gpm. Yet, three (3) of Petitioner's seven (7) wells only have a rated capacity of approximately 100 gpm with the largest well producing approximately 300 gpm. In addition, well records

from Petitioner's last cause indicated that several of Petitioner's wells had falling static and pumping water levels. As a result, Petitioner recently bagan to drill test wells in an effort to locate an adequate alternative water supply (See Project ID #2495 - Exhibit CKM-5).

Q: Can Petitioner purchase water from another nearby source?

A: Petitioner is somewhat limited to purchasing water from other nearby sources. Petitioner is generally prohibited from purchasing water from Indiana American Water Company, Inc. (the closest wholesale source of supply), because of the restrictions regarding the diversion of water outside the Great Lakes—St. Lawrence River Basin. The specific restrictions are outlined in The Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement and the Great Lakes—St. Lawrence River Basin Water Resources Compact.[1] These circumstances limit aquifer or supply availability for Petitioner and make it more important for the utility to continue to closely monitor its current well assets and explore additional water supply alternatives to meet future demands.

Wastewater System:

Q: What are Petitioner's Wastewater collection and treatment characteristics?

A: Petitioner's extended aeration plant processes an average daily flow of .656 million gallons per day (mgd) with a capacity of up to 3.59 mgd. The collection system consists of approximately 30 miles of asbestos cement (AC) pipe with only 3 miles of polyvinyl chloride (PVC) pipe. There are seven (7) lift stations

[1] Additional information about the Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement and the Great Lakes—St. Lawrence River Basin Water Resources Compact is available at The Council of Great Lakes Governors website at www.cglg.org

with another four (4) miles of cast or ductile iron sewer force main. Petitioner's system is designed and intended for sanitary only treatment. However, because the collection system is over 40 years old, constructed of inferior pipe material (as compared to current material), and may have significant residential sump pump inflow, surface and grey water, inflow and infiltration is still a problem.

Q: Is Twin Lake's wastewater system operating adequately?

A: Petitioner consistently meets its National Pollutant Discharge Elimination System (NPDES) discharge permit parameters issued by the Indiana Department of Environmental Management (IDEM). However, as I discuss below, Petitioner has a significant inflow and infiltration (I&I) problem. The collection system still experiences sanitary sewer overflows (SSO) that have plagued Petitioner as recently as April 25, 2007. On that date, Petitioner reported to IDEM a sanitary sewer overflow at manholes 307 and 316 and also at outfall 001 after a 2.5" rain event. Petitioner also reported to IDEM that on January 4, 2007 it experienced a "partial bypass" of the plant at Outfall 001 which resulted in the discharge of 300,000 gallons of wastewater to Stoney Run Creek. Most of the collection system is Asbestos Cement (AC) pipe, and although this pipe material does not react negatively with acids or caustics, it is very rigid and will crack or crumble with ground movement. Because of this deficiency, PVC and ductile iron are the material of choice today. Aside from the AC pipe issue, Mr. Burris and Mr. Montgomery contend that residential sump pumps connected to the sewer system are exacerbating its I&I problem. Certainly, any introduction of surface or grey water will be troublesome for a system not designed to convey or treat it.

Q: What improvements have been constructed and are in use in this Cause?

A: In his testimony Mr. Montgomery listed several water and wastewater improvement or rehabilitation projects in Exhibits CKM-4 and CKM-5. Mr. Montgomery states all line item projects on CKM-4 have been completed and items 3, 4, 5, 8, 9, 10, and 11 on CKM-5 have been completed.

Q: Do you find these projects to be completed and useful?

A: Yes, these projects are needed and useful to Petitioner's operation. Also, the cost and completion of each project has been verified through work order, site inspection, or other records.

Q: What has Petitioner done to prevent sewage overflows?

A: Petitioner installed a lift station and 10 inch force main designed to stop or minimize surcharging manholes by diverting flow from over 500 homes away from the northeast quadrant or Lake Area. Petitioner's records show the lift station was placed in service on September 8, 2003 at a cost of approximately $1 million dollars. The new lift station improved the surcharging and resulting sewer overflow problem but did not eliminate it altogether

Mr. Burris and Mr. Montgomery stated that Petitioner intends to commit up to $200,000 annually in an effort to more quickly remedy its inflow and infiltration ("I&I") remediation problem. Petitioner also intends to continue televising, lining, and replacing sewer main as needed. Specifically, Petitioner will continue replacing "bellied" sections of sewer main that are susceptible to plugging, lining

sections of main as required, continue with manhole repair, and intensify smoke testing procedures that will identify line fractures and home sump connections. In particular, Petitioner will evaluate additional methods of diverting flow from the main that parallels the Lake and/or modify the flow characteristics in that area.

Q: Do you have any recommendations?

A: I recommend that Petitioner complete Project ID #4167 (if not already completed) listed on Exhibit CKM-5, which is a sewer collection system study to identify source of inflow and infiltration. Petitioner should provide a copy of the study to the Commission and the OUCC. I recommend that Petitioner also complete Project ID # 3395 listed on Exhibit CKM-5, which is the replacement of 1,100 foot of "dilapidated sewer main that is allowing inflow and infiltration into the sanitary sewer system." I also recommend that Petitioner complete Project ID # 4163, listed on Exhibit CKM-5, which is to the rehabilitation and sealing of "manholes that are allowing inflow and infiltration."

Field Hearing February 16th, 2007

Q: Do you have any comments or observations regarding the Twin Lakes Utility Public Field Hearing (the "Hearing") of last February 6th?

A: Yes. It is apparent that Petitioner still has service relation problems with many of its customers. Fourteen (14) customers gave oral testimony before the Commission while a number of others submitted written testimony. Much of the testimony was obstinate and disapproving.

Q: What was the nature of the complaints?

A: Many asserted that Petitioner is incapable or unwilling to properly manage its facility. For instance, Mr. Ron Bedwell, storm water coordinator at Lake of the Four Seasons, discussed and exhibited photos of E. coli counts resulting in "no swimming" notices, overflowing manholes, algae, trench washout with debris, overflowing cleanout, grease balls, and a fish kill at Bass Lake. These photos have been reproduced in order of the preceding list in RAP Attachment 2.

Q: What is your account of Mr. Bedwell's Photo Exhibits?

A: Surcharging or overflowing sewers, along with Petitioner's overflowing cleanout referred to as a "green pipe" the evening of the Hearing, will result in high E. coli counts and the resulting no swimming notices as well as the fish kill in Bass Lake. In spite of its $309,000 collection system investment over the last three (3) years, Petitioner still has significant I&I problems during periods of heavy rain. Mr. Bedwell's other photos not related to I&I include photos of algae, grease balls, and a trench washout with trench debris. The newly constructed trench washout occurred because seeding had not taken root, and the debris is an example of the contractor's insufficient clean-up. One item of trench debris, referenced at the Hearing, appears to be a piece of AC pipe that may have broken-off while being transported or loaded by the contractor. Trench debris is an example of insufficient contractor clean-up.

Q: How does Petitioner intend to improve its communication with its customers?

A: Petitioner has complied with a Commission customer "Notice" requirement

stemming from its last Cause. The Notice, which appears to be mailed yearly, offers an 800 number and details payment options, service problems, and grievance procedures. More recently, Petitioner has developed a new web site at www.uiwater.com. Listed on the web site, among a number of other tabs, is a Contact Center and a Contact Tab. The Contact Center Tab consists of such useful topics as shown below:

- Billing or Service Questions
- Customer Service Questions
- Automatic Bill Payment
- Frequently Asked Questions

The Contact Tab is divided into a customer or developer tab. The developer tab reveals an interactive box labeled "Question/Comments" whereas the customer is given an email address of midwestcs@uiwater.com, office hours, and a fax number. Communication seems to be encouraged in one case (the developer) but not the other. In addition, Mr. Burris was scheduled to appear April 23rd at a Property Owners Association meeting. His visit may be useful in developing lines of communication as to Petitioner's plans and intentions as well as addressing customer concerns.

Q: What are your recommendations?

A: I recommend the Commission Order the following:

- Petitioner complete Project ID #4167 (if not already completed) listed on Exhibit CKM-5, which is the completion of a sewer collection system study to identify source of inflow and infiltration. Petitioner should provide a copy of the study to the Commission and the OUCC.

- Petitioner complete Project ID # 3395 listed on Exhibit CKM-5, which is the replacement of 1,100 foot of "dilapidated sewer main that is allowing inflow and infiltration into the sanitary sewer system."

- Petitioner complete Project ID # 4163, listed on Exhibit CKM-5, which is the rehabilitation and sealing of manholes that are allowing inflow and infiltration.

- Petitioner continue televising collection mains and perform smoke testing procedures to identify line fractures and home sump connections.

- Petitioner continue filing I&I quarterly reports as stipulated in Ordering paragraph 3 of Cause No. 42488. In addition, Petitioner should also enclose a Project Detail sheet as shown in RAP Attachment 3. This sheet is already generated internally by Petitioner and will be useful to the Commission and OUCC in understanding the dynamics, justification, and progress of various I&I projects.

- Petitioner modify its website customer-contact-tab to a more user-friendly and responsive approach. (For example, communication should be encouraged and a specific contact identified as Petitioner's representative along with some reasonable commitment of response time.)

Q: Does this conclude your testimony?

A: Yes.

Corporate Offices:
2335 Sanders Road
Northbrook, IL. 60062
(800) 831-2359 Phone
(847) 498-2066 Fax

Wednesday, February 7, 2007

Jerry Webb
Director-Gas/Water/Sewer Division
Indiana Utility Regulatory Commission
302 W. Washington Street, Ste. E-306
Indianapolis, IN 46204

Re: Twin Lakes 2003 Rate Case (IURC Cause 42488)
Inflow & Infiltration Report for Fourth Quarter, 2006

Dear Mr. Webb:

This report is being sent in compliance with one of the terms of the Indiana Utility Regulatory Commission's March 31, 2004, Order approving the parties' settlement of the above-referenced case. Ordering paragraph on #3 on page 6 of the Commission's Order directs Twin Lakes to file quarterly reports with this Commission concerning Twin Lakes Inflow and Infiltration (I&I) remediation program.

The following table describes actions taken for the fourth quarter of 2006 by Twin Lakes to address instances of inflow and infiltration on its system.

Description	Cost
Manhole Study	$32,500.00
Manhole Repair Planning	$5,000.00
Manhole Inserts Installation	$38,000.00
Upper Manhole Sealant	$21,305.00
Realignment of Manhole Lids and Rings	$17,440.00
Raise Manholes	$13,200.00
Video 42,533 linear feet of sewer main	$42,533.00
Engineering to replace 1028 L.F. of sewer main on Kingsway Dr.	$24,669.75
Replace 1028 L.F. of sewer main on Kingsway Dr.	$57,950.00
Previous Expenditures	$317,691.20
Total (through end of 4th quarter 2006)	**$570,288.95**

In addition to this original for your records, I have enclosed two copies to be stamped "RECEIVED" and returned in the enclosed envelopes to our local counsel and myself.

Done
2/12/07

Sincerely,
Twin Lakes Utilities, Inc.

Charles L. Alexander
Area Manager, Indiana Operations

Microbac

ANALYTICAL RESULTS

Date: *Wednesday, June 08, 2005*

Client:	Lakes of the Four Seasons		
Client Project:	Storm Water Study		
Client Sample ID:	Holiday - Site of Discharge	*Work Order / ID:*	ME0506136-05
Sample Description:		*Collection Date:*	06/05/05 16:45
Sample Matrix:	Aqueous	*Date Received:*	06/06/05 09:00

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
E. COLI	Method: **9213D MOD**			Prep Date/Time: **06/06/05 10:18**		Analyst: **NM**	
Escherichia Coli	A	*3400*	10		CFU/100ml	1	06/06/05 10:00
FECAL CONFIRMATION	Method: **9222D**			Prep Date/Time:		Analyst: **NM**	
Fecal Confirmation	A	*Present*			P/A	1	06/07/05 11:00
FECAL COLIFORM	Method: **9222D**			Prep Date/Time: **06/06/05 10:20**		Analyst: **NM**	
Fecal Coliform	A	*3500*	10		/100ml	1	06/06/05 10:00
TOTAL COLIFORM	Method: **9222B**			Prep Date/Time: **06/06/05 10:16**		Analyst: **NM**	
Total Coliform	A	*Present*			P/A	1	06/06/05 10:00

Microbac

ANALYTICAL RESULTS

Date: *Wednesday, June 08, 2005*

Client:	Lakes of the Four Seasons		
Client Project:	Storm Water Study		
Client Sample ID:	Holiday - Site of Discharge	*Work Order / ID:*	ME0506136-04
Sample Description:		*Collection Date:*	06/05/05 16:45
Sample Matrix:	Aqueous	*Date Received:*	06/06/05 09:00

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
E. COLI Method: 969.10 Prep Date/Time: 06/06/05 10:22 Analyst: NM							
Escherichia Coli	A	>30000	10		cfu/g	1	06/08/05 10:30
FECAL COLIFORM Method: 9222D Prep Date/Time: 06/06/05 10:25 Analyst: NM							
Fecal Coliform	A	290000	1000		cfu/g	1	06/08/05 10:30
TOTAL COLIFORM Method: 9222B Prep Date/Time: 06/06/05 10:30 Analyst: NM							
Total Coliform	A	>30000	100		cfu/g	1	06/08/05 10:30

Microbac

ANALYTICAL RESULTS

Date: *Wednesday, June 08, 2005*

Client:	Lakes of the Four Seasons		
Client Project:	Storm Water Study		
Client Sample ID:	Spillway Overflow 2	*Work Order / ID:*	ME0506136-02
Sample Description:		*Collection Date:*	06/05/05 16:20
Sample Matrix:	Aqueous	*Date Received:*	06/06/05 09:00

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
E. COLI	Method: 9213D MOD				Prep Date/Time: 06/06/05 10:18		Analyst: NM
Escherichia Coli	A	760	10		CFU/100ml	1	06/06/05 10:00
FECAL CONFIRMATION	Method: 9222D				Prep Date/Time:		Analyst: NM
Fecal Confirmation	A	Present			P/A	1	06/07/05 11:00
FECAL COLIFORM	Method: 9222D				Prep Date/Time: 06/06/05 10:20		Analyst: NM
Fecal Coliform	A	610	10		/100ml	1	06/06/05 10:00
TOTAL COLIFORM	Method: 9222B				Prep Date/Time: 06/06/05 10:16		Analyst: NM
Total Coliform	A	Present			P/A	1	06/06/05 10:00

250 West 84th Drive, Merrillville, IN 46410 TEL.800.536.8379 TEL.219.769.8378 FAX 219.769.1664

Microbac

ANALYTICAL RESULTS

Date: *Wednesday, June 08, 2005*

Client:	Lakes of the Four Seasons		
Client Project:	Storm Water Study		
Client Sample ID:	Lake On the Green 3	*Work Order / ID:*	ME0506136-03
Sample Description:		*Collection Date:*	06/05/05 16:30
Sample Matrix:	Aqueous	*Date Received:*	06/06/05 09:00

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
E. COLI	Method: **9213D MOD**			Prep Date/Time: **06/06/05 10:18**		Analyst: **NM**	
Escherichia Coli	A	*410*	10		CFU/100ml	1	06/06/05 10:00
FECAL CONFIRMATION	Method: **9222D**			Prep Date/Time:		Analyst: **NM**	
Fecal Confirmation	A	*Present*			P/A	1	06/07/05 11:00
FECAL COLIFORM	Method: **9222D**			Prep Date/Time: **06/06/05 10:20**		Analyst: **NM**	
Fecal Coliform	A	*640*	10		/100ml	1	06/06/05 10:00
TOTAL COLIFORM	Method: **9222B**			Prep Date/Time: **06/06/05 10:16**		Analyst: **NM**	
Total Coliform	A	*Present*			P/A	1	06/06/05 10:00

Microbac

ANALYTICAL RESULTS

Date: *Wednesday, June 08, 2005*

Client:	Lakes of the Four Seasons		
Client Project:	Storm Water Study		
Client Sample ID:	Club House Beach Lake Holiday	*Work Order / ID:*	ME0506136-06
Sample Description:		*Collection Date:*	06/05/05 17:05
Sample Matrix:	Aqueous	*Date Received:*	06/06/05 09:00

Analyses	ST	Result	RL	Qual	Units	DF	Analyzed
E. COLI	Method: **9213D MOD**			Prep Date/Time: **06/06/05 10:18**		Analyst: **NM**	
Escherichia Coli	A	*2200*	10		CFU/100ml	1	06/06/05 10:00
FECAL CONFIRMATION	Method: **9222D**			Prep Date/Time:		Analyst: **NM**	
Fecal Confirmation	A	*Present*			P/A	1	06/07/05 11:00
FECAL COLIFORM	Method: **9222D**			Prep Date/Time: **06/06/05 10:20**		Analyst: **NM**	
Fecal Coliform	A	*2300*	10		/100ml	1	06/06/05 10:00
TOTAL COLIFORM	Method: **9222B**			Prep Date/Time: **06/06/05 10:16**		Analyst: **NM**	
Total Coliform	A	*Present*			P/A	1	06/06/05 10:00

Water Emergency

Do not consume any water in the Four Seasons... Boiling the water will not help. Water will be shut off until further notice. Per Bob Campbell, community manager and Twin Lakes Utilities. Bottled water distribution centers will be set up at the front gate, clubhouse, and fire station 1 on 275. The water will be distributed as soon as it is available. Please have patience.

Date 9-13-06

Ms4 documentation of sewage spill in Lake Holiday

At approximately 9:30 am Storm water Coordinator Ron Bedwell observed the sewer manhole by the E.L.S.D. well overflowing into Lake Holiday.
At that time I spoke with the LOFS Security Department and informed them to contact the DNR and report the sewage spill. The DNR reported that they would have an officer contact us when he was done with the call he was currently on.
We took a sample and pictures of the overflowing water at approximately 10:00 am.

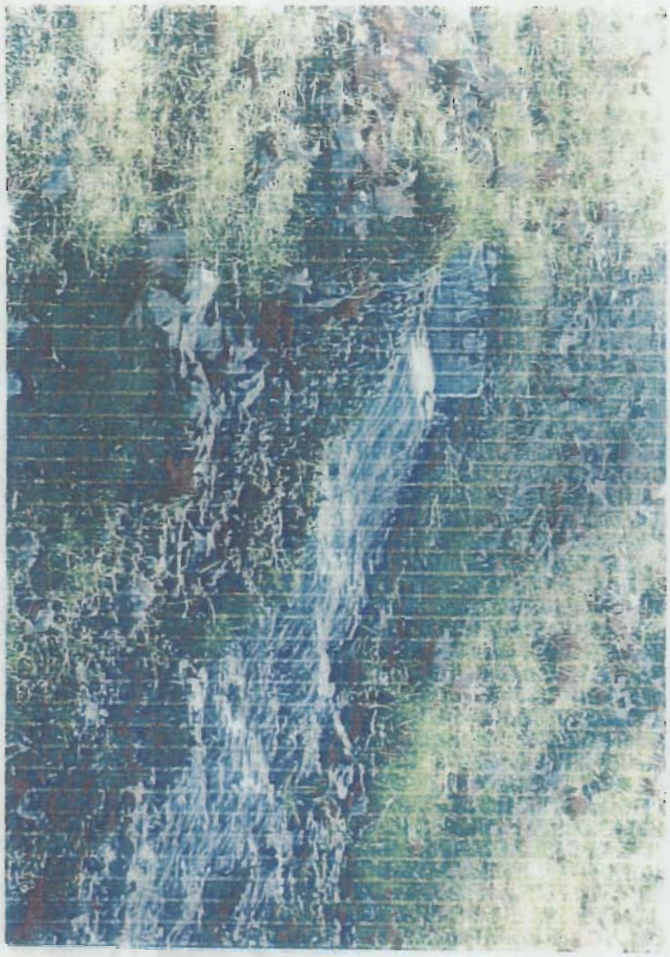
Ron Bedwell
L.O.F.S MS4 coordinator

sewer overflowing into lake (847x649x24b jpeg)

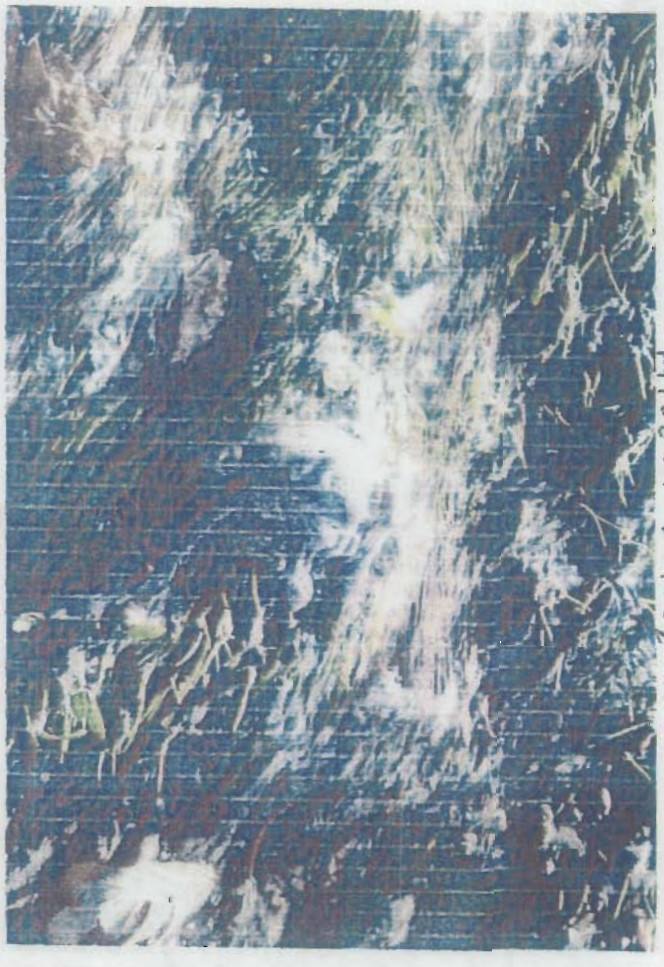
Surcharging Sewer 7 / 21/ 2003 E. Lakeshore Dr. LOFS

manhole 307

Kiss Beach Summer 2006



Sewer Overflow in Bass Lake Hidden Valley



Fish Kill Bass Lake 167 - Gizzard Shad
2 - Bullheads
4 - crappie
2 - Bluegills

Edward Kaufman

Table of Contents

TESTIMONY OF EDWARD R. KAUFMAN, CRRA
CAUSE NO. 43128
TWIN LAKES UTILITIES, INC.

Q: Please state your name and business address.

A: My name is Edward R. Kaufman and my business address is Indiana Government Center North, 100 North Senate Avenue, Room N501, Indianapolis, Indiana 46204-2215.

Q: By whom and in what capacity are you employed?

A: I am a Senior Analyst employed by the Indiana Office of Utility Consumer Counselor (OUCC).

Q: Please describe your credentials

A: I graduated from Bentley College in Boston, Massachusetts with a Bachelors degree in Economics/Finance and an Associates degree in Accounting. Before attending graduate school, I worked as an escheatable property accountant at State Street Bank and Trust Company in Boston, Massachusetts. I was awarded a graduate fellowship to attend Purdue University where I earned a Masters of Science degree in Management with a finance concentration.

I was hired as a Utility Analyst in the Economics and Finance Division of the OUCC in October 1990. My primary areas of responsibility have been in utility finance, utility cost of capital and regulatory policy. I have worked on a range of utilities including natural gas, electric, water and wastewater. I was promoted to Principal Utility Analyst in August 1993 and to Assistant Chief of Economics and Finance in

July 1994. As part of an agency wide reorganization in July 1999, my position was reclassified as the Lead Financial Analyst within the Rates/Water/Sewer division. In October, 2005 I was promoted to Assistant Director of the Water/Wastewater division. I have participated in numerous conferences and seminars regarding utility regulation and financial issues. I have been awarded the professional designation Certified Rate of Return Analyst (CRRA). This designation is awarded based upon experience and the successful completion of a written examination. I have testified before the IURC on several occasions.

INTRODUCTION

Q: What is the purpose of your testimony and how is it organized?

A: My testimony has two sections. The first section of my testimony presents my estimate of Twin Lakes Utilities' cost of equity. The second section explains my criticisms of Ms. Ahern's proposed cost of equity analysis.

Q: What investigations have you performed in preparation of your testimony?

A: I reviewed the Petition, testimony and exhibits filed by Petitioner in this Cause as well as Ms. Ahern's rebuttal testimony from Twin Lakes' last rate case. I have conducted discovery and reviewed the results. My preparations also include a review of numerous financial articles that discuss anticipated returns in the market and are relevant to estimating cost of equity. I have attended numerous meetings with OUCC staff and attorneys to discuss and evaluate issues in this Cause.

Q: Please summarize your testimony.

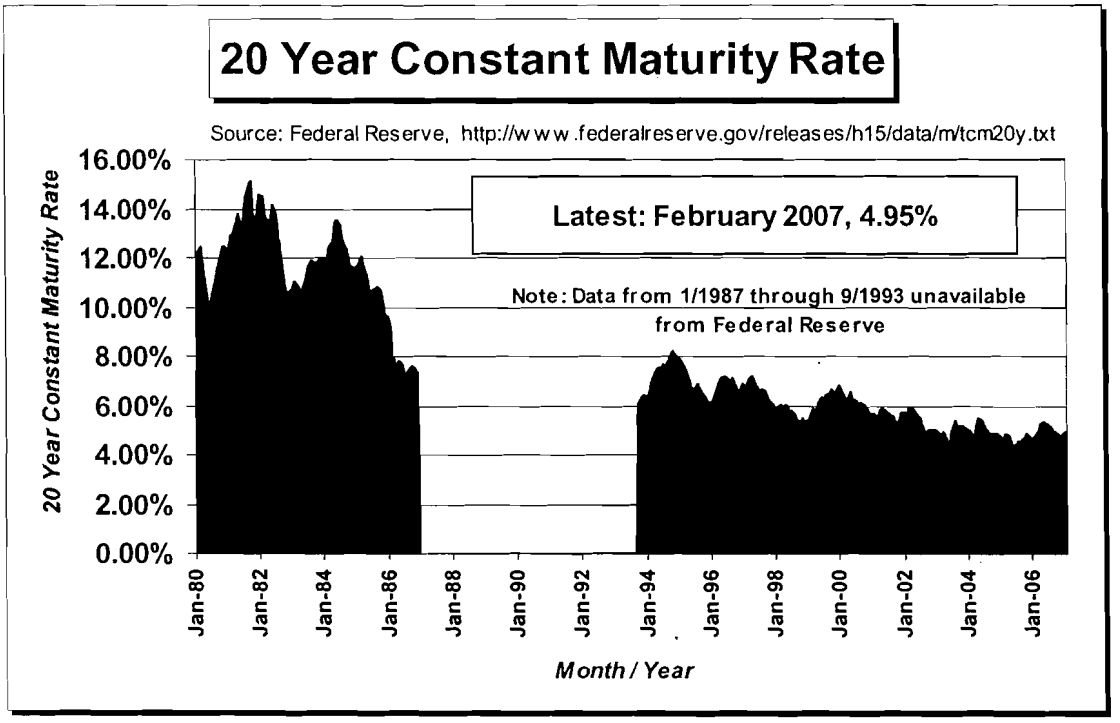
A: I use both a DCF and CAPM analysis to estimate Petitioner's cost of equity. My estimate of Petitioner's cost of equity is 9.15% and includes a company specific risk adjustment of 40 basis points. Before adjusting for Petitioner's company specific risk my DCF model produces a range of estimates from 8.09% to 8.37% and my CAPM analysis produces a range of estimates of 7.58% to 9.22%. A cost of common equity of 9.15% results in a weighted cost of capital of 7.65%.

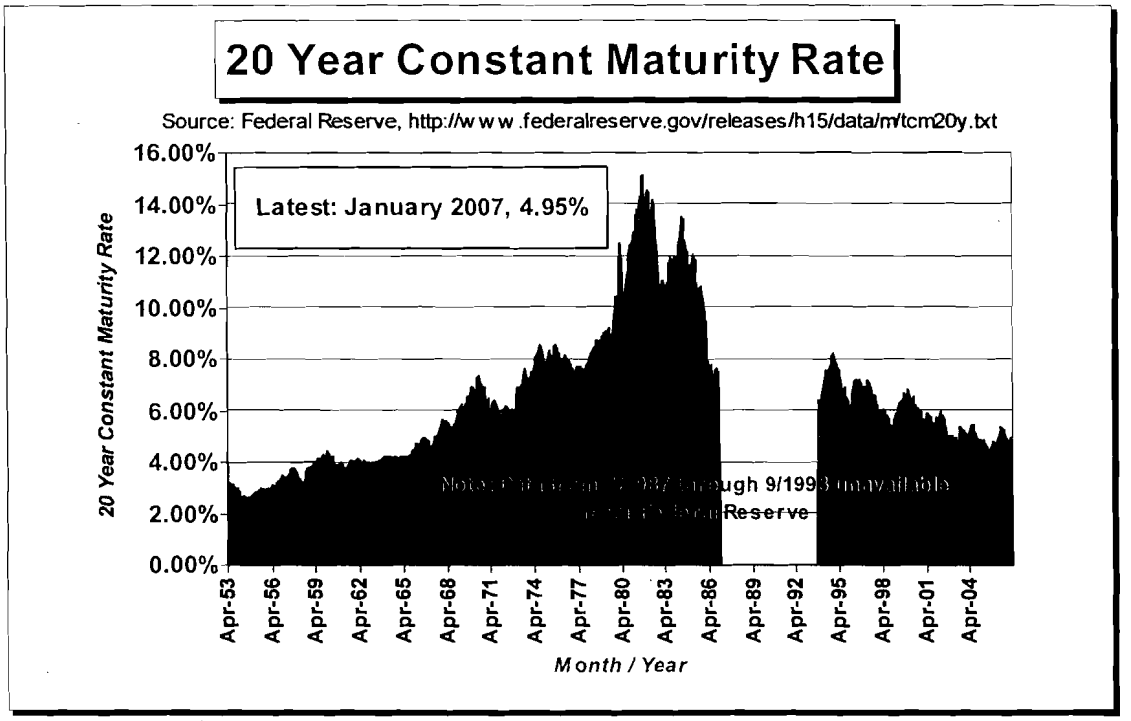
My estimate of Twin Lake's cost of equity is 235 basis points lower than Ms. Ahern's recommended cost of equity. The majority of our differences are explained by the inputs to the various models and the weight we give to each of the models. For example, in her CAPM and Risk Premium analyses Ms. Ahern relies on the arithmetic mean risk premium and gives no weight to the geometric mean risk premium. Ms. Ahern also gives considerable weight to her Comparable Earnings model while I do not use the Comparable Earnings model.

Inflation rates influence capital costs and are at historically low levels. Over the last 16 years (1991–2006), inflation has not been greater than 3.4% and has averaged 2.6% (Ibbotson's 2007 SBBI Yearbook, page 327). The last time the United States had 16 successive years where inflation was less than 3.5% was from 1952 -1967. In 2006 inflation was 2.5% (Ibbotson's 2007 SBBI Yearbook, page 327). Moreover, projected inflation is also expected to remain low. In its Survey of Professional

Forecasters the Federal Reserve Bank of Philadelphia (February 13, 2007) forecasts that inflation will average 2.35% over the next 10 years (Attachment 1).

Interest rates are influenced by inflation and an increases in interest rates generally increases the cost of equity. While short term interest rates have increased over the last three years, long term interest rates remain at historically low levels and are still lower today than they have been during most of the last 40 years. The two charts (below) show the yields on 20 - Year Constant Maturity US Treasury bonds for January 1980 – February 2007 and April 1953 – February 2007.





The lower cost of capital is demonstrated through some of the lowest long term interest rates that we have seen since the late 1960s. Lower interest rates translate directly into a lower cost of equity. The cost of equity presented in my testimony reflects the fact that long term capital costs are still lower today than they have been in the last 40 years.

Finally, Petitioner's cost of long term debt has decreased since its last rate case from **7.24% to 6.58%**. This represents a decrease of approximately 65 basis points. Thus, the historically low interest rates and inflation rates help explain why costs of equity remain at historically low levels.

Q: Other than the historically low level of inflation and interest rates, are there any other reasons that help explain why current cost of equity estimates are lower than they have been in the past?

A: Yes, In 2003 President Bush signed the *Jobs and Growth Tax Relief Reconciliation Act of 2003*, which reduced the tax rates on dividend income and capital gains. The tax legislation reduced the tax on dividends from 30 percent (the average tax bracket for individuals) to 15 percent. Holding all other factors constant, the cut in taxes on dividends leads to an increase in after tax return on dividends. In response to the cut in taxes on dividends, stocks with high payout ratios (such as water utilities) typically experienced an increase in their price and a subsequent reduction in their dividend yield. In other words there was reduction in their cost of capital. I am not asserting the IURC should authorize a lower cost of equity as result of the tax cut because any influence from the tax cut is already reflected in current price and subsequent dividend yields of the stocks in the proxy groups. My discussions here simply attempts to explain one reason why the models may produce lower results than what has been seen in by water utilities in previous rate cases.

Q: Please compare Petitioner's proposed cost of equity in its last rate case (Cause No. 42488) and its proposed cost of equity in this rate case.

A: In Petitioner's last rate case, Ms. Ahern recommended a cost of equity of for Petitioner of 11.60%. Her proposed cost of equity included a company specific risk adjustment of 25 basis points. In this cause Ms. Ahern recommends a cost of equity of 11.50% and includes company specific risk adjustments of 40 basis points. Thus,

Ms. Ahern's purposed cost of equity for the water industry is 25 basis points lower in this case than it was in Petitioner's last rate case.

Q: Please compare the cost of debt during Petitioner's last rate case and cost of debt in this case.

In Petitioner's last case Ms. Ahern used a forecasted long term risk free rate of 5.7% (Schedule 10 page 3 of 3 rebuttal –Updated January 26, 2004) while in this case Ms. Ahern uses a long term forecasted risk free rate of 5.0% (PMA-11 page 3 of 3). Thus, long term U.S. Treasury bonds have a somewhat lower yield than the yield at time of Petitioner's last rate case. Also as explained earlier in my testimony Petitioner's cost of long term debt has decreased since its last rate case from 7.24% to 6.58%. This represents a decrease of approximately 65 basis points.

Q: Please describe your schedules and attachments.

A: My testimony includes 3 schedules and 8 attachments. Schedule 1 is two pages and contains a summary of the results of my cost of equity models. Schedule 2 is three pages and contains my DCF analysis. Schedule 3 is six pages and contains my CAPM analysis. Attachments 1 is a copy of the 1st quarter Survey of Professional Forecasters, Federal Reserve Bank of Philadelphia Release (February 13, 2007). Attachment 2 is a chart published by Value Line titled "A Long Term Perspective Dow Jones Industrial Average, 1920 – 2005" (Quarterly Price Range). Attachment 3 is an article titled 9% Forever? by Justin Fox published by CNNMoney.com on December 26, 2005. Attachment 4 contains two articles, the first by Roger Ibbotson

titled Building the Future From the Past and the second by John Campbell titled Stock Returns for New Century. Attachment 5 is selected pages from a presentation made by Professor Aswath Damodaran at the Society of Utility and Regulatory Financial Analysts (SURFA) 39th Annual Financial Forum held on April 19-20, 2007. Attachment 6 is page 2 from Value Line's Ratings and Reports (February 23, 2007). Attachment 7 is page 33 from Duke University's Winter 2007 CFO Business Outlook Survey U.S. Attachment 8 (four pages) is the first page from four issues of Value Line's Summary & Index from February 23, 2007 – March 16, 2007. Attachment 9 is one page from each of the October 2006 and April 2007 Blue Chip Financial Forecasts.

PROXY GROUP

Q: Can you apply the DCF model and CAPM directly to Twin Lakes Water Company?

A: No. The DCF model and the CAPM can be applied only to companies whose stock is publicly traded. Because Petitioner's stock is not publicly traded, Petitioner's cost of equity must be estimated through the use of a proxy group. Ideally, I prefer to use a proxy group of 6 to 10 water companies with similar operating and financial characteristics, comparable size, operating in the Midwest and have available financial information. These companies do not exist. Thus, one has to choose between developing a proxy group with a smaller number of members or including companies that are less comparable. Ms. Ahern uses two proxy groups of water utilities. One proxy group includes 6 companies covered by AUS Utility Reports and

the other proxy group includes 4 companies covered by Value Line. I have concerns about Ms. Ahern's use of Southwest Water Company in her Value Line proxy. Southwest Water Company earns only 39% of its revenues from regulated water operations. All other members of Ms. Ahern's proxy groups earn at least 85% of their revenues from regulated water operations (AUS Utility Reports, page 23, April 2007. In past cases I have not included Southwest Water Company in my proxy group(s). I also have concerns regarding the data (more specifically the lack of data) that is available to estimate the growth rate in a DCF analysis for companies not covered by Value Line's Standard Universe. Value Line's Standard Universe provides historical and forecasted growth rates for EPS, DPS and BVPS. Other sources such as Zacks and Reuters do not provide the same level of detail. Thus an estimate of growth for companies not covered in Value Line's Standard Universe is based on fewer estimators of growth and in my opinion is less reliable. Despite my concerns about the composition of Ms. Ahern's proxy groups, for this case I have accepted her proxy groups. However for my DCF analysis I will give less weight to my analysis that uses Ms. Ahern's AUS proxy group because that analysis relies completely on forecasted growth rates and does not include any historical growth rates. I consider any differences that Ms. Ahern and I have over proxy group to be minor. Ms. Ahern and I have several more significant differences regarding the choice of models and the inputs to these models and I did not want my concerns over the content of the proxy groups to overshadow my other concerns.

DISCOUNTED CASH FLOW ANALYSIS

Q: Please describe the discounted cash flow model (DCF).

A: The DCF model is used by investors to determine the appropriate price to pay for a particular security. This model assumes that the price of a security is determined by its expected cash flows discounted by the company's cost of equity. On a one year horizon, the price of a stock (P_0) is equal to the anticipated dividends paid during the year (D_1) plus the anticipated price of the stock at the end of the year (P_1) divided by one plus the company's cost of equity (k). In turn, this year's year-end price (P_1) is determined by next year's anticipated dividends (D_2) and next year's anticipated year-end price (P_2) divided by one plus the company's cost of equity (k).

$$P_0 = \frac{(D_1 + P_1)}{(1 + k)} \quad \text{and} \quad P_1 = \frac{(D_2 + P_2)}{(1 + k)}$$

Since investors may plan to hold securities for many periods, the DCF equation can be restated for an infinite or unknown number of periods as follows:

$$P_0 = D_1/(k-g)$$

(Where the price of a security (P_0) equals the anticipated dividends paid over the current period (D_1) divided by the company's cost of equity (k) minus the expected growth rate of dividends (g)).

The company's cost of equity must be greater than its expected dividend growth rate for this model to be valid. By rearranging the model, one can obtain the familiar DCF formula used in regulatory proceedings:

$$k = (D_1/P_0) + g$$

(Where the cost of equity (k) equals the forward dividend yield (D_1/P_0) plus the expected growth rate in dividends per share (g). To estimate the cost of equity (k), one must estimate the forward yield (D_1/P_0) and the expected growth rate in dividends (g)).

Q: How did you calculate your forward yields (D_1/P_0)?

A: Before one can calculate a forward yield (D_1/P_0), one must first calculate a current yield (D_0/P_0). AUS Utility Reports calculates current yields for large publicly held utilities each month. A company's current yield equals its current annual dividends (D_0) divided by its current stock price (P_0). The current annual dividend is calculated by multiplying the company's most recent quarterly dividend by four. For purposes of this testimony, I have used three and six month average current yields.

Q: How did you convert your current yields (D_0/P_0) into forward yields (D_1/P_0)?

A: I used the following equation to convert a current yield to a forward yield: $(D_1/P_0) = (D_0/P_0) * (1 + .5g)$. For example, if company X had a current yield of 6.0% and an expected growth rate of 4.0%, I would multiply the 6.0% current yield by 1 plus 2.0% or 1.02, (2.0% is one half of the 4.0% expected growth rate). This would result in a forward yield of 6.12% or an increase of 12 basis points over the current yield.

Q: Has the Commission supported the use of the one half years growth methodology to convert current yields to forward yields?

A: Yes. Although there is no universally accepted methodology, the one half times growth methodology to convert current yields to forward yields has been regularly accepted by this Commission. This position was specifically affirmed in the Commission's order in Indiana American Water Company Cause number 40103. In that order on page 40, this Commission stated:

> We are well aware of the advantages and limitations of the various approaches used by each of the witnesses. For example, the half-year method used by the OUCC for calculating the forward dividend yield is the most frequently used approach in this jurisdiction, and it is rarely a point of contention in DCF analysis. We believe that it fairly represents the dividend payments expected and received by investors, while the full year method employed by Petitioner overstates the dividend yield.

Q: How did you estimate the long run dividend growth component (g) of the DCF model?

A: The DCF model assumes that investors expect earnings per share, dividends per share, and book value per share (EPS, DPS, BVPS) to all grow at the constant long run growth rate (g). In order to estimate (g), I used both historical and forecasted growth rates of EPS, DPS, and BVPS. I used Value Line as my primary source of growth rates. I also used forecasted growth rates of earnings per share from Zacks and Reuters, as well as forecasted growth rates in dividends per share from AUS.

Q: What is your estimated (g) long run dividend growth component of the DCF model for the proxy group of water companies?

A: My estimate of growth is 5.27% for the AUS proxy group and 6.02% for the Value Line proxy group. To estimate growth for the AUS proxy group, I averaged Zacks, Reuters forecasted growth in EPS and AUS forecasted growth in dividends per share.

To estimate growth for the Value Line proxy group, I averaged the forecasted and historical growth rates of EPS, DPS, and BVPS from Value Line.

Q: Have you included zero and negative numbers to estimate the dividend growth (g) for your DCF analysis?

A: No. I excluded zero and negative growth figures to estimate (g) in my DCF analysis. In Cause No. 40103, Indiana American Water Company, the Commission stated as follows:

> In all cases, however, the Commission expects the parties to exercise sound judgment when deciding which inputs to include as part of their analysis. In this case, the inclusion of negative growth rates for certain earnings and book value per share data by the OUCC biased the derivation of its growth rates downward. On the other hand, the Petitioner's sole reliance on Value Line's 10-year dividend growth rate data had the opposite effect.

(Final Order Cause No. 40103 – May 30, 1996, p. 41 (Emphasis in original)

While I eliminated zero and negative growth rates from my DCF analysis, I do not believe that investors completely ignore these growth rates. While I agree that investors (typically) do not expect earnings growth to be very low or negative, when a company has experienced very low growth or negative growth in EPS, DPS or BVPS that will likely reduce the investor's future growth expectations.

Q: Why haven't you eliminated low (positive) growth rates from your DCF analysis?

A: Low growth rates are not ignored by the investor. While investors may not expect low growth rates to occur (especially in perpetuity), if a company has experienced low historical growth rates and/or is forecasted to experience low growth rates, those

low growth rates will be considered by investors when they estimate that company's future growth rate. One has to remember our purpose in estimating a growth rate in the DCF model. We are trying to derive the investor's long term (perpetual) forecast in growth of the company. Relevant factors should not be ignored. Moreover, if one is going to eliminate low positive growth rates, then it is appropriate to eliminate high positive growth rates too. However, at this time in the water industry we have seen a divergence in historical and projected growth rates. In my analysis only a small number of the growth rates are within 200 basis points of the mean. Thus, if one eliminates all of the growth rates that one might consider either too high or too low, there would not be enough data points to effectively estimate the water industry's cost of equity. This concern is illustrated in Ms. Ahern's DCF analysis based on projected growth in EPS (Schedule PMA 6, bottom half of the page) where she excludes (5 of 6 companies) 83% from her AUS proxy group and (3 of 4 companies) 75% of her Value Line proxy group because the result is either too high or too low. Thus, while many of the individual growth rates I have used, by themselves would not produce a reasonable result, in aggregate my proposed growth rates are reasonable, produce a reasonable estimate of water industry growth and are in fact higher than the growth rates the OUCC presented in Petitioner's last rate case (4.98% & 5.2% D. Murphy, Schedule 2 page 1 of 2).

Q: Do you have any additional data to support the reasonableness of the growth rates used in your DCF analysis?

A: Yes. Value Line publishes a chart titled "A Long Term Perspective Dow Jones Industrial Average, 1920 – 2005" (Quarterly Price Range) which provides average growth rates in EPS (5.3%), DPS (4.9%), and BVPS (5.2%) (Attachment 2). Thus, the average growth rates of EPS, DPS and BVPS for the Dow Jones Industrial Average each averaged less than 6.0% over the last 85 years. The Value Line chart helps to support my use of growth rates in the 5%-6% range in my DCF analysis.

Q: Can short to intermediate term forecasts lead to unreasonably high estimated growth rates (g) in a DCF analysis?

A: Yes. An article published in the National Regulatory Research Journal (NRRI) of Applied Regulation supports my concerns about using unreasonably high growth rates in a DCF analysis.[1] On page 98 the article states as follows:

> Financial research has made it clear that no company can sustain a growth rate over the long run that exceeds the growth rate of the economy.[15] Since 1959 the long-term sustainable real growth rate in the economy has been about 3.5%.[16] If long-term inflation is expected to be about 2.5%, the maximum long-term sustainable nominal growth for any company today is about 6.0%. Since utilities are amongst the slowest growing firms in the economy, a utility today would be expected to have a long-term sustainable growth rate that is significantly below 6%.

The article also states as follows:

> The other problem with using analyst forecasts as the long-term growth rate in the DCF model is such forecasts are biased to the upside. The evidence on this issue is overwhelming.[17] The forecast bias persists year after year in large part due to the incentive structures in place at many Wall Street firms that tend to reward more

1. How improper Risk assessment leads to overstated required returns for utility stocks by Steven G. Kihim NRRI Journal of Applied regulation-Volume 1, June 2003.

optimistic projections and to discourage the incorporation of potentially negative views in analysts' forecasts.[18]

(Citations included at the end of my testimony).

Q: Please review the results of your DCF study.

A: The results of my DCF analysis ranges from 8.09% to 8.37%. My DCF analysis is based on dividend yields ranging from 2.22% - 2.79% combined with estimated dividend growth rates ranging from 5.27% to 6.02% (See Schedule 2). As illustrated in Schedule 2, both proxy groups generate similar results.

CAPM ANALYSIS

Q: Please describe your CAPM analysis.

A: The CAPM is a form of risk premium analysis used to estimate the cost of capital. The CAPM is based on the premise that investors require a higher return for assuming additional risk. Total risk is divisible into two categories, systematic risk and unsystematic risk. Unsystematic risk is that risk which is unique to the company and may include strikes, management errors, merger activity, or individual financing policy. Systematic risk is that risk that affects the entire market and includes inflation, monetary policy, fiscal policy, or politics.

Investors can eliminate unsystematic risk through diversification. Because returns of individual securities of a portfolio do not usually move in the same direction at the same time, the total risk of a portfolio is less than the risk of the individual securities that make up the portfolio. Because investors can eliminate unsystematic risk through diversification, the market does not compensate investors for assuming

unsystematic risk. Conversely, systematic risk, sometimes referred to as market risk, cannot be eliminated through diversification. However, since investments will move with different relationships to the market, investors can form a portfolio to assume any amount of market risk that he wishes. The returns an investor requires depends on the market risk that the investor is willing to assume.

Q: How is systematic (market) risk measured?

A: Beta is the measurement of an investment's relationship to the market. More specifically, beta measures an asset's price volatility compared to the market. By definition, the market has a beta of one. The market refers to the returns on all assets. Since it is very difficult to measure the return on all assets, analysts typically rely on a market index such as the Standard & Poor's 500 index as a proxy for the market. Assets more volatile than the market will have a beta greater than one and, thus, they are considered riskier than the market. Similarly, assets that are less volatile will have a beta less than one, and thus, are considered less risky than the market.

The CAPM formula can be stated as follows:

$K = Rf_c + B*(Rm-Rf)$ where,

K = Cost of Equity

Rf_c = Current Risk Free Rate of Return

B = Beta

Rm-Rf = Expected Market Equity Risk Premium

Rm = Market Equity Return

Rf = Risk Free Rate of Return

The return on an asset (K) equals the risk-free rate of return (Rf_c) plus its beta (B) multiplied by the market equity risk premium (Rm - Rf). The market equity risk premium equals the market equity return minus the risk-free rate of return.

Q: What is your opinion of the CAPM?

A: I consider the CAPM to be typically more controversial and less reliable than the DCF model. Different applications of CAPM may cause vastly different cost of equity estimates. For example, the source of beta can have a significant influence on the results of a CAPM analysis. The average betas for the two proxy groups using Value Line betas are .875 and .80 while the average unadjusted betas using Reuters' betas are .388 and .37. If one relies on a market risk premium of 5.0%, a difference in beta of .40 changes the results of a CAPM analysis by 200 basis points. If one uses a market risk premium of 7.1%, as Ms. Ahern does (PMA-11, page 3 of 3), a difference in beta of .40 changes the results of a CAPM analysis by roughly 280 basis points. (The spread between Ms. Ahern's estimate of Petitioner's cost of equity and my estimate is only 235 basis points.)

Next, estimating the market risk premium can be particularly controversial. An historical risk premium can be calculated, but the measurement of historical returns introduces the controversy of the use of geometric mean calculation versus the arithmetic mean calculation. The use of the arithmetic mean typically produces results that are 100 to 120 basis points higher than the geometric mean calculation. Selecting the appropriate time period to calculate an historical risk premium is not only controversial, but dramatically affects the results. If one relies on an historical risk premium, the longest historical period for which accurate historical data exists should be used to estimate a risk premium. I believe the geometric mean calculation is preferable over the arithmetic mean calculation because the geometric mean calculation more accurately measures the change in wealth over multiple periods. Moreover, there is growing evidence that historical data overstates the risk premium and that one should rely on a forecasted risk premium. As discussed later in my testimony, several forecasted market risk premiums range between 2.4% and 4.0%. This is far below the historical risk premiums of 5.0% (geometric – long term bonds) to 6.5% (arithmetic - long term bonds).

Q: In your CAPM analysis did you use a geometric mean risk premium or an arithmetic mean risk premium?

A: If one relies on historical returns, I believe the geometric mean is a better representation of expected returns than the arithmetic mean. However, both calculations can provide meaningful insight to estimate the market risk premium for a

CAPM analysis. Thus, my CAPM analysis considers both geometric and arithmetic mean risk premiums. I also perform a second CAPM analysis that uses a forecasted market risk premium.

Q: Utility analysts often cite to Roger Ibbotson's SBBI year book(s) to support their view that the arithmetic mean calculation should be used exclusively to estimate cost of equity. In the past has Roger Ibbotson's SBBI year book supported the use of both the geometric and arithmetic mean risk premium to employ a CAPM analysis?

A: Yes, it has. On page 59 of the 1982 Edition of Stocks, Bonds, Bills and Inflation: The Past and the Future Ibbotson stated as follows:

> The arithmetic mean historical return on a component is used in making one-year forecasts, since the arithmetic mean accurately represents the average performance over a one-year period. Over a long forecast period, however, the geometric mean historical return represents average performance over the whole period (stated on an annual basis). Therefore, we input the arithmetic mean for a one year forecast, **the geometric mean for the twenty year** forecast and intermediate values for two, three, four, five and ten year forecasts.

(Emphasis added)

While more current editions of Stocks, Bonds, Bills and Inflation advocate the use of only the arithmetic mean, I have not been able to find an explanation for the change. Moreover, as explained later in my testimony Dr. Ibbotson has recently expressed concerns about using historical data to estimate a market risk premium.

Q: Are you aware of any financial texts that advocate the use of a geometric mean calculation in a CAPM analysis?

A: Yes. In VALUATION Measuring and Managing the Value of Companies (Second Edition) by Tom Copeland, Tim Koller and Jack Murrin pages on 260 – 261 the text

specifically advocates the use of the geometric mean over the arithmetic mean to estimate cost of equity in a CAPM analysis:

> We recommend using a 5 to 6 percent market risk premium for U.S. companies. This is based on the long-run geometric average risk premium for the return on the S&P 500 versus the return in long term government bonds from 1926-1992.[4] Since this is a contentious area that can have a significant impact on valuations, we elaborate our reasoning in detail here.
>
> We use a very long time frame to measure the premium rather than a short time frame to eliminate the effects of short-term anomalies in the measurement. The 1926-1992 time frame reflects wars, depressions and booms. Shorter time periods do not reflect as diverse a set of economic circumstances.
>
> We use a **geometric average** of rates of return because **arithmetic averages are biased** by the measurement period. An arithmetic average estimates the rates of return by taking a simple average of the single period rates of return. Suppose you buy a share of nondividend-paying stock for $50.00. After one year the stock is worth $100. After two years the stock falls to $50 once again. The first period return is 100 percent; the second period return is -50 percent. The arithmetic average return is 25 percent [(100 percent – 50 percent) / 2]. The geometric average is zero. (The geometric average is the compound rate of return that equates the beginning and ending value.) (sic) We believe **the geometric average** represents **a better estimate of investors' expected return** over long periods of time.
>
> Finally, we calculate the premium over *long-term* government bond returns to be consistent with the risk free rate we use to calculate the cost of equity.

(Citation included at end of my testimony) Italics emphasis in original. Bolded emphases added.

The text further states on page 263 as follows:

> Note that the arithmetic return is always higher then the geometric return and that the difference between them becomes greater as a function of the variance of returns. Also the arithmetic

> average depends upon the interval chosen. For example, an average of monthly returns will be higher than an average of annual returns. The geometric average, being a single estimate for the entire time interval, is invariant to the choice of interval. Finally, empirical research by Fama-French (1988), Lo and MacKinlay (1988), and Poterba and Summers (1988) indicates that a significant long-term negative autocorrelation exists in stock returns.[5] Hence, historical observations are not independent draws from a stationary distribution.

(Citation included at end of my testimony)

On pages 259-260 of the text, the authors specially recommend using the 10-year Treasury bond rate. Finally, in the chart displayed on page 261, the text shows risk premiums based on the arithmetic average and the geometric average. Although not explicitly stated in the text, both calculations are based on total bond returns and not income returns.

Q: Please continue.

A: The text Analysis of Equity Investments: Valuation also supports the use of the geometric mean to estimate the market risk premium. On page 50 the text states as follows:

> Although the debate is inconclusive, this book uses the geometric means, not only for the previously given reasons but also because geometric means produce estimates of the equity risk premium that are more consistent with the predictions of economic theory.[14]

(Citation included at the end of my testimony)

Analysis of Equity Investments: Valuation is written by the Association for Investment Management and Research and is produced as a study guide for the CFA program.

Also, in a presentation made at SURFA's 39th Financial Forum (April 19-20th, 2007) Professor Aswath Damodaran printed presentation states as follows: If you choose to use historical premiums... Use the geometric risk premium. It is closer to how investors think about risk premiums over long periods.

Q: How has this Commission ruled on the issue of arithmetic mean premiums versus geometric mean risk premiums?

A: For more than 14 years this Commission has consistently given weight to both the arithmetic mean risk premium and the geometric mean risk premium. See p.12 of the Peoples Gas and Power Company Order in Cause No. 39315 Order dated October 21, 1992:

> As in the Indiana Cities case, [Cause No. 39166, July 8, 1992] we find there is merit in using both the arithmetic and geometric means and that neither result should be relied upon to the exclusion of the other.

This Commission also reaffirmed its position in Indiana American Water Company, Cause No. 40103, Order dated May 30, 1996. On page 41 of that Order this Commission stated as follows:

> The debate over the proposed use of the arithmetic and geometric means is one we consider **resolved**. As we stated in Indianapolis Water Company, Cause No. 39713-39843, each method has its

> strengths and weaknesses, and neither is so clearly appropriate as to exclude consideration of the other.

(Emphasis added)

Q: In addition to using historical data to estimate a risk premium do you also utilize forecasted information?

A: Yes. In previous cases (Cause Nos. 42520 and 42359) I expressed concerns about relying exclusively on historical data to estimate a risk premium. However, for the first time in this case my testimony includes a CAPM analysis based on a forecasted risk premium. The volume of articles that forecast a market risk premium less than the historical average has become too numerous for me to ignore. Recent articles that cite Roger Ibbotson's opinion on the use of forecasted market risk premiums also persuaded me that it was now time to include a forecasted risk premium in my CAPM analysis.

Q: Please discuss why you develop a forecasted risk premium in addition to a risk premium based on historical data?

A: As I mentioned above there is growing evidence that risk premiums based on historical data overstate expected returns. When historical equity returns are generated from increasing valuations, it increases the historical earned return, but decreases the prospective return. On page 16 from Global Economics Paper No. 120, Thoughts on Social Security Reform by Goldman Sachs (January 18, 2005) the article states as follows:

> Moreover, even abstracting from the issue of risk, the historical returns on bonds and equities substantially overstate what investors could expect on a forward looking basis. This is because the rise in

> bond and equity prices in recent decades has boosted historical returns, but it has also resulted in high bond and equity valuations that imply lower prospective returns in the future.

And:

> Why is the expected rate of return for equities so low relative to historical returns? In evaluating the high rate of returns on equities historically, it is important to distinguish between returns generated by rising dividends and earnings versus the returns generated by higher valuations (i.e. a rise in price/earnings multiples). A good portion of the high rate of return earned by equities over the past century has been due to a rise in equity market valuation. When equity valuations are rising, equity returns are usually high. However, the increase in equity valuation **reduces**, rather than raises prospective equity return by reducing the dividend return on equities.

(Emphases added)

Although not a perfect apple to apples comparison, it might be easier to explain how increasing historical returns can lead to declining forecasted returns by looking at a hypothetical bond. Assume this hypothetical bond is a risk-free bond issued at a hypothetical current market rate of 7.0% for 20 years. Now assume that the bond is sold after five years, but the required return on a current risk-free bond of 15 years (equal to the remaining life on our original bond) has declined to 5.0%. Because of the decline in interest rates, when the bond is sold the original bond holder will be able to sell his bond at a premium and will have earned a return well in excess of his original required return of 7.0%. Yet, it would be improper to use the original investor's actual earned return (which exceeds 7.0%) to estimate future required returns for bondholders. Rather, due to the decline in required return the historical earned return indicates a higher return during a period of decreasing required returns.

Because returns are stated for bonds it is easier to understand how changes in valuations can cause a divergence between historical returns and prospective returns. However, the same concept can apply to stocks as well as bonds. For example CNNMoney.com's article: 9% Forever? (December 26, 2005) by Justin Fox discusses and quotes Eugene Fama as follows (See Attachment 3):

> A harder to dismiss critique came from Mr. Efficient Markets himself, Ibbotson's dissertation advisor Eugene Fama. In a series of papers written with Dartmouth's Kenneth French, Fama has argued that the capital asset pricing model, or at least its 1970's corollary that the risk premium is constant doesn't match the facts. "My own view is that the risk premium has gone down over time basically because we have convinced people that it's there." Fama says. Ibbotson's stock market forecasting model is thus a victim of its own success.
>
> **Ibbotson agrees** that Fama has a point, and that **he can no longer bank on the historical equity premium to predict the future.**

Emphases added

This is important. Even Roger Ibbotson has now expressed concerns about using historical data to estimate the risk premium.

Q: Are there any articles or texts that support the view that historical data overstates the market risk premium?

A: Yes. There are several.

Building the Future from the Past by **Roger Ibbotson** (June 2002) forecasts an equity risk premium of **less than 4.0%** (Attachment 4).

The Equity Premium by **Eugene F. Fama and Kenneth R. French** (April 2001) The Abstract to their paper states as follows "We estimate the equity risk premium using dividend and earnings growth rates to measure the expected rate of capital gain. Our estimates for 1951-2000 **2.55% and 4.32%** are much lower than the equity premium produced by the average stock return, 7.43%. Our evidence suggests that the high average return for 1951-2000 is due to a decline in discount rates that produces large

unexpected capital gains. Our main conclusion is that the stock market return of the last half- century is a lot higher than expected."

Equity Risk Premium as Low as Three Percent? by James Claus and Jacob Thomas, Journal of Finance (October 2001) Subtracting 10-year risk free rates from these estimated discount rates suggests that the equity risk premium is only about three percent.[2]

Investment Survival in a Single Digit World – Portfolio Solutions by Richard A. Ferri, CFA (November 19, 2001) analysis implies a market risk premium for Large stocks over Long term US Treasury bonds of **3.0%.**

Stock returns for a New Century by John Campbell (Professor of Applied Economics, Harvard University) (June 2002) forecasts an equity risk premium of **1.5% to 2.0%** (Attachment 4).

The Real Cost of Equity by Marc H. Goedhart, Timothy M. Koller and Zane D. Williams of McKinsey Quarterly (October 2002) asserts as follows "The inflation-adjusted cost of equity has been remarkably stable for 40 years, implying a current equity risk premium of **3.5 to 4 percent**."

CEO Confidential The Equity Risk Premium: Its Lower than You Think (November, 2002) published by Goldman Sachs estimates an equity risk premium for the United States of **2.3%**.

Corporate Finance: New evidence puts risk premium in context by Elroy Dimson, Paul Marsh, and Mike Stauton (London Business School) (March 2003) forecasts a geometric equity risk premium of **2.5% to 4.0%** and an arithmetic mean risk premium of around **3.5% to 5.25%**. The article notes that these estimates are lower than historical premia quoted in most text books and surveys of market professionals. The Equity Risk Premium – Part 2 – Investopedia.com by David Harper (February 4, 2004) estimates an equity risk premium of **1.5% to 2.5%**.

Thoughts on Social Security Reform by Goldman Sachs (January 18, 2005) discusses the assumptions used by the US Government to discuss Social Security reform. Page 22 of the article states as follows: "The Commission assumed that personal accounts would earn real returns of 6.5% on equities, 3.5% on corporate bonds and 3% on Treasury Bonds." This implies a risk premium of **3.5%**. Note the Goldman Sachs article asserts that the "Return Assumptions are Too High".

Investors are in for a Shock published by CNN.Money (November 28, 2005) forecasts an equity risk premium of **2.4%**.

What's ahead for Stocks and Bonds – And How to Earn Your fair Share by John C. Bogle (Founder and former Chairman, The Vanguard Group) (May 15, 2006) estimates the annualized return on stocks for the next 10 years is 8.0% and that the annualized return on US Treasury 10 year bonds for the next 10 years is 5.1%. This implies an equity risk premium of **2.9%**.

Capital Market Outlook – Investment Strategies Group by Banc of America Investment Advisors (October 2, 2006) uses a market risk premium **3.5%** to forecast long term market returns for large company stocks.

Survey of Profession Forecasted by Federal Reserve Bank of Philadelphia (February 13, 2007) estimates the return on stocks, over the next ten years to be 7.5% and the return on 10 year US Treasury bonds to be 5.0%. These estimates imply a risk premium **2.5%**.

The articles I list above support the opinion that the expected risk premium is well below the historical averages. The number and variety of articles demonstrates that this opinion has become main stream. Even Roger Ibbotson, one of the most respected providers of historical data typically used to estimate a historical risk premium no longer supports a risk premium that relies exclusively on historical data. Based on the articles above, it is appropriate to consider the results of a CAPM analysis that relies on a forecasted risk premium instead of one that exclusively relies on historical data to estimate cost of equity. My testimony includes additional discussion about forecasted risk premiums in my analysis of Ms. Ahern's testimony.

Q: In Cause No. 42488 did Petitioner's witness Ms. Ahern criticize the OUCC's witness for not using a forecasted risk premium and relying exclusively on a historical risk premium.

A: Yes. On page 8 of Ms. Ahern's rebuttal testimony in Cause No. 42488, she asserts that Ms. Murphy incorrectly relied exclusively upon "historical equity risk premia" in her CAPM analysis.

Q: What forecasted market risk premium have you used in your CAPM analysis?

A: The articles cited above provide a range of forecasted market risk premiums from a low of 1.5% to a high of 5.25%. Based on the sources cited above I believe a forecasted risk premium of 4.25% is reasonable.

Q: Do you have any additional sources that support your proposed forecasted risk premium of 4.25%?

A: Yes. In a presentation made at the 39th Financial Forum held by the Society of Utility and Regulatory Financial Analysts titled: Equity Risk Premiums: Looking backwards and forwards... by Professor Aswath Damodran (April 20, 2007) he estimated that the current forecasted risk premium was 4.16% (Attachment 5 includes pages 1, 14, 16 and 17 of his presentation).

At the same seminar in a presentation titled Revisiting the Equity Risk Premium, Associate Professor Felicia C. Marston concluded that the "Ex ante risk premium on utilities (using dividend growth model) was estimated at 4.15%."

Q: Is the risk free rate of return also controversial?

A: Yes. Aside from the market risk premium controversy, financial analysts do not agree on the determination of the risk free rate. Theoretically, the risk-free rate is the rate of return on a completely risk free asset. In practice, analysts typically use yields on United States Treasury Securities as a proxy for the risk-free rate. One could use the yield on 91-day Treasury Bills as a proxy for the theoretical risk free rate of return. However, the volatility of 91-day Treasury Bill rates has led many analysts to use longer term Treasury instruments as an estimate of the risk free rate. Given the degree of controversy surrounding the application of the CAPM, I have more confidence in the results of my DCF analysis.

Q: How did you estimate the risk free rate?

A: Due to the controversy surrounding the selection of the appropriate risk free rate, I have reviewed short, intermediate and long term risk free rates. I used one year Treasury securities as an estimate of short term yields, the average of five year and ten year Treasury securities as an estimate of intermediate term yields, and 30-year Treasury securities as an estimate of long term yields. Although I reviewed short term, intermediate term and long term interest rates, I give most of my emphasis to long term interest rates, some of my emphasis to intermediate term interest rates and no weight to the results generated from the use of short term interest rates.

Q: In your CAPM analysis, did you use spot interest rates or average interest rates?

A: I have not used spot interest rates. In my analysis I used both 3 month and 6 month average yields. In my opinion it is more appropriate to use an average yield calculated over a reasonable period of time, than to rely on spot data. This Commission's determination of Petitioner's cost of equity should not gyrate on every twist and turn in the market but should reflect more of a long term perspective. However, to reflect current market conditions one must also be careful not to use data that is too old or too stale. I believe, at this time, the use of 3 month and 6 month average yields strikes a reasonable balance of using current data while not relying on data that has become stale.

Q: How did you estimate the value of beta?

I reviewed beta estimates for the companies in Ms. Ahern's proxy groups from Value Line, Reuters, SmartMoney.com and NASDAQ.com (Betas are provided on pages 3 of Schedule 3). I am not as confident in Value Line betas as I used to be and have concerns about relying exclusively on Value Line betas to perform a CAPM analysis. These concerns are discussed in detail later in my testimony. Since there is not one definitive calculation used to estimate beta and different calculations can result in dramatically different estimates, I reviewed other sources of beta. Reuters, Smartmoney.com and NASDAQ.com produced water company betas that were substantially below the Value Line beta. In my analysis I have given Value Line's

beta 50.0% of the weight and the other sources of beta 50.0% (16.67% each) of the weight. This results in an average beta of 0.71 and 0.748.

Q: Value Line uses adjusted beta. Do the other sources you cite adjust their betas?

A: To the best of my knowledge they do not. However, according to a text book I used in college the equation that Value Line uses to adjust beta is (Adjusted beta = 0.35 + 0.67* Raw beta).[2] So that one can compare Value Line's betas to the other sources of betas I have applied this equation to the betas from Smartmoney.com, Reuters and NASDAQ (Exhibit 3, page 3 of 6 for betas and their source).

Q: Why do different sources of betas provide different results?

A: Different sources of beta use different calculations. Changing the calculation changes the result. For example, some sources use five years' worth of data while others use three years. Some sources use monthly data, while others use weekly data. Value Line compares returns to the NYSE, while some other sources compare returns to the S&P 500. Each decision can influence the result. Since there is no one definitive way to calculate beta, it is reasonable to look at more than one source.

Q: What is the basis for your concerns about Value Line's calculation of beta?

A: First, I read the testimony of Dr. Steve Brown in Docket 06-00290 Tennessee-American Water Company. Dr. Brown is an economist for the Consumer Advocate and Protection Division of the Tennessee's Attorney General's Office. Dr. Brown

2. Investment Analysis and Portfolio Management, Second Edition by Frank Reilly page 631.

argues that Value Line's betas are biased upward. To support his opinion Dr. Brown performed a distribution analysis on Value Line's betas, which found as follows (Page 41, lines 21-35):

> More than 60% of Value Line's betas are at or above the market's beta of 1, and less than 40% of the companies are less risky than the market beta. The average beta value is 1.10. The maximum beta is 2.85. The minimum beta is .35. In his testimony Dr. Vilbert mentioned a "stock with a beta of 0.5." This is a rare value in Value Line, only six betas have a value of .5 or below. All of these numbers confirm that Value Line's betas are biased upward, making every company appear more risky than it is when compared to the market and raising Dr. Vilbert's estimated cost of equity in Tennessee.

Dr. Brown's analysis led me to question the validity of Value Line's calculations of betas.

Q: Did you perform your own independent analysis to verify the results of Dr. Brown's analysis?

A: Yes. I was able to replicate his analysis with current data from Value Line and produced similar results. My analysis produced a range of betas from 0.30 to 2.95. The average beta was 1.0898. Also 40.7% of the companies had a beta below 1.0 and 59.3% of the companies had a beta at or above 1.00 (50.1% had a beta above 1.0 and 8.3% had a beta of 1.0). The results of my analysis are provided on Schedule 3 page 6 of 6.

Q: Is Dr. Brown's testimony the only reason for your reservations regarding Value Line Betas?

A: No. There has been a dramatic increase in Value Line's betas for companies in Ms. Ahern's water company proxy groups.

	July 26, 2006 (PMA 10 Page 8 of 9)	January 26, 2007 (E. Kaufman Sch. 3 page 3 of 6)
American States	.75	.80
Aqua America	.80	.90
Artesian	na	na
California Water	.80	.90
Middlesex Water	.80	.85
Southwest Water	.70	.90
York Water	.45	.55

Thus, over the last six months every water company included in Ms. Ahern's proxy groups has experienced an increase in its beta of at least .05. Four of the companies have experienced an increase of at least 0.10 including one which has experienced an increase of .20. Over virtually the same period of time dividend yields for these companies did not increase. In fact, they actually declined on average approximately 15 basis points. If there was a measurable increase in water utility risk (as indicated by the increase in beta), one would also expect to have seen a decrease in price and an increase in dividend yield. This did not happen. Thus, I have not seen a good explanation for why (Value Line's) water utility betas have increased across the board over the last six months.

Q: What are your conclusions regarding Value Line's betas?

A: Even if Value Line's betas are not upwardly biased, it is reasonable to review other several sources of beta and Value Line betas should not be relied to the exclusion of all other sources of beta. Thus, to estimate beta my analysis gives 50.0% of the weight to Value Line's betas and 50.0% (or 16.67% each) the other sources of beta.

Q: Please review the results of your CAPM studies.

A: The results of my CAPM analysis can be seen on Schedule 3. The cost of equity based on my CAPM analysis that use a historical risk premium ranges from 8.76% to 9.22%. The results of my analysis that use a forecasted risk premium range from 7.54% to 8.05%

To estimate cost of equity, using a historical risk premium, I calculated both a geometric mean risk premium and an arithmetic mean risk premium. I then averaged the risk premiums and combined the risk premiums with the risk free interest rates described above. Since I used two proxy groups, this analysis produced eight distinct CAPM results. I used both three and six month average interest rates (obtained from Value Line's Selections and Opinion) to estimate the risk free rates. To estimate cost of equity with a forecasted risk premium, I combined a risk premium of 4.25% (as described above) with the same risk free rates. Again, since I have used two proxy groups, this analysis produces eight additional CAPM results.

RECOMMENDATIONS

Q: Please discuss the factors you considered to estimate Petitioner's cost of equity.

A: Because Pauline Ahern and I have estimated cost of equity through the use of a proxy group, it is important that we adjust our estimate to reflect Petitioner's specific operating conditions, and any factors that cause Petitioner to be different than the proxy groups. As discussed earlier in my testimony Petitioner is riskier than the proxy group. Petitioner's witness Pauline Ahern has used a 25 basis point business

risk adjustment and a 15 basis point financial risk adjustment. I have accepted Ms. Ahern's adjustments and increased the results of my analysis by 40 basis points.

Q: Please explain your estimation of Petitioner's cost of equity?

A: The results of my unadjusted DCF analysis range from 8.09% to 8.37%. The results of my unadjusted CAPM analysis range from 7.54% to 9.22%. The combined range of her DCF and CAPM analysis is 7.54% to 9.22%. After adding 40 basis points to account for Petitioner's specific company risk my cost of equity estimates provides a range of 7.94% (8.0% rounded) to 9.62% (9.6% rounded). I believe that Petitioner's cost of equity is somewhat above the midpoint of my range and I recommend a cost of equity of 9.15%.

Q. In today's market is a 9.15% cost of equity reasonable?

A: Yes. As discussed earlier in my testimony, lower inflation rates translate directly into lower capital costs. This holds true for both the cost of debt and the cost of equity. Over the last 16 years, inflation has not been greater than 3.4% and has averaged 2.6% (Ibbotson's 2007 SBBI Yearbook, page 327).

Significantly, this trend is expected to continue for some time. Indeed Value Line's Ratings and Reports (February 23, 2007; Attachment 6) forecasts that the CPI will range between 2.3% - 2.5% over the next five years and that the GDP Deflator will range between 2.1% - 2.3%. In its Survey of Professional Forecasters, the Federal Reserve Bank of Philadelphia (February 13, 2007) forecasts an even longer period of

low interest rates, estimating that inflation will average 2.35% over the next 10 years (Attachment 1). The Congressional Budget Office (CBO), The Budget and Economic Outlook: Fiscal Years 2008 to 2017 (January 2007) provides economic projections for calendar years 2008 through 2018. The CBO projects an annual increase in the Consumer Price Index of only 2.2% per year for the years both 2009-2012 and 2013–2017. The CBO report also forecasts an increase of only 1.8% per year in the GDP Price Index over the same periods.[3]

More importantly, these predictions and concerns bear directly on these proceedings. Because a low inflation rate has a significant influence on current capital costs, such effects must be recognized and included in any determination of Petitioner's cost of equity. For any investment the investor's required return includes compensation for anticipated inflation. When anticipated inflation is lower, so is the required cost of equity. Because we are in an inflation environment that is not like what we have seen over most of the last 35-40 years it is not unreasonable to estimate a cost of equity that is lower than what we have seen in many years.

Q: Do you have additional support for the reasonableness of your proposed cost of equity?

A: Yes. In its Winter 2007 Quarterly Survey Duke University surveyed CFO's for each company in the S&P 500 their estimate of returns for the S&P500 for the next ten years. The average result is 8.12%. (Attachment 6)

3. http://cbo.gov/showdoc.cfm?index=7731&sequence=0

An article entitled Son, Don't Count On Double-Digit Stock Returns which appeared in the June 26, 2000 edition of Business Week web page, refers to a study performed by Eugene Fama and Kenneth French. According to the article:

> Fama and French argue that over the long run, stocks are likely to out perform risk free debt by only 3% to 3.5% a year.
>
> Fama and French estimate that in the future, stocks will return to more like their pre 1950 norm. Says French: "We're saying that if you're a pension fund, you ought to pencil in returns of **3% to 3.5% [above the risk free rate] for the next 30 years**."
>
> However, if you're a 30-year old who's not saving much because you're relying on making returns just as profitable as those in the past decades from now until you retire, think again—or you just might end up living on dog food and government cheese.

(Emphasis added)

While this article is somewhat dated, a risk premium of 3.0% to 3.5% is consistent with many of the articles cited earlier in my testimony. The current long-term risk free rate was 4.84% as of the close of business on April 20, 2007. If the long term risk free rate (rounded to 4.85%) is combined with the Fama - French risk premium of 3.0% to 3.5%, it results in an expected return of 7.85% to 8.35%.

In his book Stocks for the Long Run, Jeremy J. Siegel discusses the long term stability of real returns for equities. On page 11 he states as follows:

> It is clear that the growth of purchasing power in equities not only dominates all other assets but is remarkable for its long-term stability. Despite extraordinary changes in the economic, social and political environment over the past two centuries, stocks have yielded between 6.6 percent and 7.2 percent per year after inflation in all major subperiods.

Dr. Siegel further states on page 12 as follows:

> Note the extraordinary stability of the real returns on stocks over all major subperiods: 7.0 percent from 1802-1870, 6.6% from 1871-1925 and 7.2% from 1926-1997.

As discussed above, forecasted inflation is expected to range from 1.8% to 2.5%. When the forecasted inflation rates are combined with the range of real returns of 6.6% to 7.2% it produces a range of expected equity returns of 8.5% to 9.9% (1.025[2.5% inflation] * 1.072 [7.2 real return] = 1.0988, which translates into a 9.9 (rounded) return).

Moreover, several of the articles I cited earlier in my testimony (when I discuss forecasted market risk premiums) forecast a market return for large company stocks below 9.0%. For example:

John Bogle	8.0%
Banc of America	8.5% (multiple methods)
Portfolio Solutions	7.5%
Federal Reserve Bank of Philadelphia	7.5%
Goldman Sachs on Social Security	6.5% plus inflation
Stock Returns for a New Century	5.0% - 5.5% plus inflation
Aswath Damodran (SURFA presentation)	8.86%

Additional articles support a total market return below 10.0%. For example, in the article written by Justin Fox in CNNMoney.com (December 26, 2005) 9% Forever?, the author notes that Roger Ibbotson's long run forecast for stock returns is 9.27%. The article also notes that Rob Arnott, Pasadena money manager and editor of the Financial Analysts Journal disagrees with Dr. Ibbotson and thinks future equity returns could be below 6%. (Attachment 3)

The return figures discussed above are for the overall market. The proxy groups are less risky than the overall market and should have a lower expected rate of return than the overall market. The OUCC's proposed cost of equity of 9.15% is consistent (if not high) with the forecasts made by the sources described above.

Q: In her rebuttal testimony (pages 14-15) in Twin Lakes Cause 42488 Ms. Ahern expressed concerns that an earlier John Bogle article you cited in your direct testimony in Petitioner's last case did not support the reasonableness of recommendation because of negative market returns in 2001 and 2002. Would a similar argument apply to Mr. Bogle's current article?

A: No. While , I do not accept Ms. Ahern's argument, the article I cite in this cause by John Bogle was written approximately one year ago and his recommendation would not be affected by the negative market returns from 2001 – 2002.

Q: Are you aware of any utility specific articles that support the reasonableness of your proposed cost of equity?

A: Yes. An article tiled A Blast from the Past: The Lull in Rate Cases is Coming to an End, published by Lehman Brothers, June 4, 2003, states on page 1 as follows:

> Historically, allowed returns have been 393 basis points above the 10-year Treasury yield (+/- 153 basis points), which implies decisions in the 9%+ range could be ahead. Allowed returns currently enjoyed by utility companies are several basis points above this level.

The article also states on page 11 as follows:

> As mentioned, we believe the current low interest rate environment is likely to lead to more rate cases and lower allowed returns. Historically, the spread of allowed ROE's to the 10-year Treasury bond has been 393 basis points, with a standard deviation of 153 basis points. **Based on current 10-year Treasury levels of 3.00% to 4.00%, we should begin seeing some rate cases with allowed ROE's in the 9% range.**

> Since 1980, the average allowed ROE was 13.8% (1,101 decisions) and since 1990 it was 11.8% (355 decisions). In the first quarter of 2003, the only decision out of six that was below a 10.0% ROE was the 9.96% received by Energy East subsidy Rochester Gas & Electric. It is worth noting, however, that this decision applies to only a one-year period and its ROE could be reset higher in the following year. We have also begun to see Staff recommendations in rate cases in the mid-9% range. For instance, New Jersey Board of Public Utilities' staff recommended a 9.75% ROE for Public Service Electric & GAS and Jersey Central Power & Light. Since 1980, the spread to treasuries was lower when rates were the highest. **We think it is only a matter of time before we see rate case decisions with allowed ROEs in the 9.0 to 10.0% range.**

(Emphases added)

The Lehman Brothers article recognizes the significant decline in interest rates and clearly anticipates that regulatory commissions will be authorizing cost of equities that are in the 9.0% to 10.0% range. As quoted above the article states historically allowed returns on equity have been 393 basis points above the yield on 10-year US Treasury. As of April 20, 2007 the yield on 10 year US Treasury Bonds was 4.67%. When the current yield on 10-year US Treasury bonds is combined with a spread of 393 basis points, it results in an estimated cost of equity of 8.6%. The OUCC's recommended cost of equity of 9.15% is 65 basis points above the cost of equity that would be produced by adding a 393 basis point premium to the current yield on 10 year US Treasury bonds.

Q: Are you aware of any commission findings that support the reasonableness of your proposed cost of equity?

A: Yes. The West Virginia Public Service Commission issued an order in West Virginia American Water Company's rate case on January 4, 2004. In that order the

Commission authorized a **return on equity of 7.0%**. In that cause the utility recommended a cost of equity of 10.25%, the Consumer affairs division recommended a cost of equity of 8.25% and the Commission staff witness recommended a cost of equity of 6.67%.

Q: Are you aware of any other recommended cost of equity's for water utilities below 9.0%?

A: Yes. Dr. Steve Brown recently recommended a return on equity of 7.5% for Tennessee American Water Company in his testimony filed on March 5, 2007 (Docket No. 06-00290).

CRITIQUE OF MS. AHERN'S ANALYSIS

Q: What is the purpose of this section of your testimony?

A: In this section of my testimony I will discuss my opinions of the cost of equity methodologies employed by Petitioner's witness, Pauline Ahern.

Q: Please summarize Ms. Ahern's cost of equity models.

A: Ms. Ahern uses two proxy groups and presents a DCF, a Risk Premium, a CAPM and a Comparable Earnings analysis to estimate Petitioner's cost of equity. The results of her models can be seen on page 5 of her testimony and on page 2 of 18 of Schedule PMA-1. The results of her models range from 9.6% (DCF) to 14.1% (Comparable Earnings). Ms. Ahern concludes that an unadjusted range of 10.8% to 11.35% is reasonable. Ms. Ahern then adds a total of 40 basis points to account for Petitioner's

company specific risk compared to the industry. This produces a range of 11.20% to 11.75%. Ms. Ahern's recommends a cost of equity is 11.50%.

Ms. Ahern's proposed cost of equity is 10 basis points lower in this cause than it was during Twin Lakes' last cause. Her DCF analysis produces a result that is 0-30 basis points lower in this cause. Her Risk Premium analysis produces a result that is 20-30 basis points lower in this cause. Her CAPM analysis produces a result that is 20 basis points lower in this cause. Finally, her Comparable Earnings analysis produces a result that is 40-50 basis points higher in this cause.

MS. AHERN'S DCF MODEL

Q: Please summarize your disagreements with Ms. Ahern's applications of her DCF models.

A: Ms. Ahern performs two DCF analyses. The results of her DCF analysis can be seen on Schedule PMA-6. Her first analysis is based on historical and projected growth in DPS, EPS, and BR+SV, and her second analysis is based on projected growth in EPS. Each analysis is applied to both of Ms. Ahern's proxy groups. Her analyses produce an estimated cost of equity of 9.6% for her AUS proxy group and 9.9% for her Value Line proxy group.

While I do not agree with all of the mechanics of her analysis based on historical and projected growth in DPS, EPS, and BR+SV, my major disagreement with that analysis is that Ms. Ahern excludes any proxy member with an indicated cost of equity at or below 8.4%. Ms. Ahern removes any "indicated common equity cost

rate" that is less than 200 basis points above her prospective yield on A rated Moody's public utility bonds of 6.4% (Ms. Ahern's footnote 6). By excluding any result at or below 8.4% Ms. Ahern loses half of the results in both her AUS proxy (3 of 6) and Value Line proxy (2 of 4). Moreover, after removing companies from her proxy group, the remaining companies in her proxy groups have an indicated growth rate of 7.5% and 8.4%. Both growth rates are above a reasonable long tern (perpetual) growth rate for companies in the water industry. Moreover, as discussed earlier in my testimony several sources have forecasted total market returns at or below 8.4%. Thus one should not simply remove all results with an indicated cost of equity of 8.4%. Finally, even if one accepted Ms. Ahern's theory about removing companies with an indicated return less than 200 basis points above "A" utility bonds, her analysis has overstated the yield on "A" utility bonds. The current yield on "A" utility bonds (Value Line Selections and Opinions March 2, 2007) is 5.74%. Thus, a cut-off point 200 basis points above the yield on "A" utility bonds would be 7.74%.

Also one needs to be careful when one develops a DCF analysis based exclusively on projected EPS. Projected EPS data are not long term (perpetual) estimates of EPS. The long-term projections of EPS provided by companies who make such estimates are typically for only five years. Five year estimates (by themselves) do not necessary represent a reasonable long term estimate. Moreover, analyst forecasts of EPS tend to be optimistic, overstate long term growth and should not be used in isolation. I would be more concerned with Ms. Ahern's use of forecasted growth EPS, but her

analysis based on projected EPS excludes every company from her analysis except California Water Services Group because the indicated result is either too high or too low. Ms. Ahern also eliminates results above 12.0% from her DCF analysis (footnote 7). Thus, Ms. Ahern's analysis based on forecasted EPS effectively uses a proxy group of one company. While, I believe the result of her DCF analysis based on projected EPS happens to provide a reasonable result, I am concerned about an analysis that effectively relies on a proxy group of one company.

Q: Has the Commission supported the use of dividend per share data and book value per share data in addition to earnings per share data in estimating the growth (g) component of the DCF calculation?

A: Yes. In its Final Order in Peoples Gas & Power Company, Cause No. 39315, Order dated October 12, 1992, p.11 the Commission stated as follows:

> We are also concerned with Petitioner's method of calculating the DCF growth component. Petitioner relies exclusively on dividend growth, while ignoring earnings per share and book value per share data. We have discussed the problems with this approach in Northern Indiana Fuel and Light, Cause Number 39145, January 29, 1992, p.25 which is set forth here in pertinent part:
>
> > The Petitioner claims that book value and earnings data used by Public may distort or bias a growth rate estimate because of accounting differences between firms. Although we agree historical and projected dividend information are important considerations when estimating future rates of growth for the DCF model, we do not believe that book value and earnings data should be ignored. It is clear that dividend growth cannot exceed earnings or book value growth in the long run. To derive growth estimates in the past, this Commission has sanctioned the use of per share data for dividends, earnings, and book value. We continue to view the use of these data as a legitimate method of estimating future growth when

> judiciously employed. See generally In re Indiana Gas Co., Inc., (Ind. URC September 18, 1987) Cause No. 38080, 86 P.U.R. 4th 241 at 285-286. In re Indiana Michigan Power Co., (Ind. URC August 24, 1990) Cause No. 38728 116 P.U.R. 4th at 1 19-20. We Conclude that Public's use of all available per share data was appropriate for estimating Petitioner's growth rate.

> On the other hand, Mr. Kaufman paid attention to the above expressed concerns and judiciously employed earnings per share, book value per share, as well as dividends per share in his analysis.

In Gary-Hobart Water Corporation (acquired by Indiana American Water Corporation), Cause No. 39585, Order dated December 1, 1993, this Commission again expressed its opinion on page 17 of its Final Order:

> This Commission has stated in many cases that although we agree historical and projected dividend information are important considerations when estimating future rates of growth for the DCF model, we do not believe that book value and earnings data should be ignored.

More recently in Cause No. 42029 Indiana American Water Company, Order dated November 6, 2002 the IURC stated on page 32 as follows:

> In the past this Commission has consistently sanctioned the use of both historical and forecasted per share data. We continue to believe that both historical and forecasted earnings, dividends and book value per share data are useful when employing the DCF model

Q: Summarize your comments on Ms. Ahern's estimates of (g).

A: The goal in estimating growth (g) in the DCF model is to derive a reasonable long term estimate of growth in dividends. Ms. Ahern's analysis relies heavily on intermediate term forecasts in EPS to estimate the growth rate in dividends for her

DCF models. More specifically, Ms. Ahern's estimates of growth are well above historical norms and do not appear to be sustainable given the high payout ratios being employed by most water utilities. Ms. Ahern's optimistic growth rates (g) overstate the results of her DCF analysis.

MS. AHERN'S CAPM ANALYSIS

Q: Please summarize your disagreements with Ms. Ahern's CAPM analysis.

A: Ms. Ahern performs two CAPM analyses: The traditional CAPM and the Empirical CAPM (ECAPM). The results of her CAPM analysis can be seen on PMA-11 page 2 of 3. My primary disagreement with Ms. Ahern's CAPM analyses is her estimate of the market risk premium. Ms. Ahern uses a market risk premium of 7.1% (PMA 11, page 3 of 3, Notes 1 & 2). To derive her estimate of the market risk premium Ms. Ahern averages a historical market risk premium of 7.1% and a forecasted market risk premium of 7.0%.

Ms. Ahern's historical market risk premium of 7.1% is based on an historical arithmetic mean market return of 12.3% and a historical risk free rate of return of 5.2%. For her risk free rate of return Ms. Ahern relies solely on income returns and not total returns. My two disagreements with Ms. Ahern's historical risk premium is that it relies solely on an arithmetic mean calculation (ignores the geometric mean) and it uses income returns instead of total returns for the risk free rate of return.

Ms. Ahern's forecasted market risk premium is based upon Value Line's 3-5 year "Estimated Median Price Appreciation Potential" (Appreciation Potential) from page 1 of its Summary and Index and its forecasted dividend yield. Using this data Ms. Ahern estimates a total market return of 12.0%. Ms. Ahern then subtracts a forecasted risk free rate of return of 5.0% to estimate a forecasted market risk premium of 7.0%. As I will explain below, I do not believe it is appropriate to use Value Line's 3-5 Year Appreciation Potential as an input to estimate a total market return for a CAPM analysis.

Q: Please discuss your concerns regarding Ms. Ahern's sole reliance on an arithmetic mean risk premium.

A: Ms. Ahern has not considered both the arithmetic and geometric mean returns to estimate a historical market risk premium. When a shareholder owns an investment over multiple periods, they earn a geometric mean return. They do not earn an arithmetic mean return. Thus, to rely exclusively on an arithmetic mean return overstates expected returns. The IURC has consistently relied on both the arithmetic and geometric mean return to estimate an historical market risk premium. But, also as discussed earlier in my testimony in the 1982 version of Ibbotson's Stocks, Bonds, Bills and Inflation, Dr. Ibbotson supported the use of both the arithmetic and geometric mean risk premium depending on the time frame for the forecast.

Q: How has this Commission ruled on the issue of arithmetic mean premiums versus geometric mean risk premiums?

A: As discussed earlier in my testimony the IURC has consistently given weight to both the arithmetic and geometric mean calculations.

Q: Do you agree with Ms. Ahern's use of long term government income returns to estimate the historical equity risk premium?

A: No, I do not. In PMA 11 page 3 of 3 Note 1 of her testimony, Ms. Ahern uses income returns on long term US Government securities rather than total returns to estimate the market risk premium in her CAPM analysis. Ms. Ahern relies on Ibbotson Associates recommendation to support her use of income returns versus total returns in her CAPM analysis. However, on page 61 of Ibbotson's SBBI 2001 Yearbook, Valuation Edition it states as follows:

> Anticipated changes in yields are assessed by the market and figured into the price of a bond. Future changes in yields that are not anticipated will cause the price of bonds to adjust accordingly. Price changes in bonds due to unanticipated changes in yields introduce price risk into the total return. Therefore, the total return on the bond series does not represent the riskless rate of return. There is no evidence that investors expect the historical trend of bond **capital losses** to be repeated in the future (otherwise bond prices would be adjusted accordingly). Therefore, historical total returns are **biased downward** as indicators of future expectations. The income return better represents the unbiased estimate of the purely risk free rate of return since an investor can hold a bond to maturity and be entitled to the income return with no capital loss.

(Emphases added)

While the theory of Dr. Ibbotson's argument has some merit, I do not agree with his application. Dr. Ibbotson's argument implies that because of capital losses bond income returns **exceeded** bond total returns and therefore, bond total returns are

biased downward. If one follows Dr. Ibbotson's assertions, then his measure of bond income returns should be **higher** than bond total returns. This is not the case. Ms. Ahern uses 7.0% as her measure of the historical risk premium while the comparable risk premium based on bond total returns would be 6.5%. Thus, if total returns were **downwardly biased** as Dr. Ibbotson's analysis asserts, then total returns should be **lower** (not higher) than income returns and the use of income returns should result in a lower risk premium and not a higher risk premium.

Moreover, on page 59 of its Final Order in Cause No. 42520, the Commission supported the use of total returns in favor of income returns in a CAPM analysis.

> Another area of disagreement in the CAPM analysis is whether the model should use total returns or income returns. We find Mr. Gorman's analysis in this area to be the most persuasive. The income return on Treasury bonds is simply the average of Treasury bond yield quotes over the historical period, and this yield quote does not measure the actual return investors earn by making investments in Treasury bonds. Investors simply cannot invest only in Treasury bond income returns. Rather, investors must take the risk of variations in bond prices before they invest in treasury bonds. Therefore the actual return experienced by investors in Treasury securities is measured by total return, not simply the income return.

I agree with both the testimony of Mr. Gorman and the Commission's decision in Cause No. 42520, actual returns experienced by investors in Treasury Securities is measured by total returns, not simply income returns. Thus, it is more appropriate to use total returns in a CAPM analysis instead of income returns.

Q: Discuss your concerns with Ms. Ahern's prospective market risk premiums.

A: My primary concern is that Ms. Ahern relies on Value Line's 3-5 Year Median Appreciation Potential to estimate a total market return. Based on a 48.0% Appreciation Potential Ms. Ahern estimates 10.3% annual return from appreciation

for the market. Ms. Ahern then adds a 1.7% market dividend yield to derive a total market return of 12.0%. As described above, Ms. Ahern subtracts a risk free rate of 5.0% from the 12.0% market return to derive a market risk premium of 7.0%.

I believe Value Line's 3-5 year Median Price Appreciation Potential overstates anticipated market returns. Based on Value Line's 3-5 year Median Price Appreciation Potential, Ms. Ahern's analysis forecasts a market return of 12.0%. The articles that I quoted earlier in my testimony, expect future market returns to be lower than returns earned in the past. Given the current outlook of low inflation, I also expect market returns to be lower in the future than they have been in the past.

Moreover Value Line's 3-5 year Median Price Appreciation Potential is too volatile to be used as a reliable forecast of market expectations and is not a reliable forecast of long term market expectations. First Value Line's forecast is an intermediate term forecast and not intended to be a long term forecast. Moreover, in a four week period between February 23 and March 16 the Median Appreciation increased each week by 5.0% from 30% - 35% - 40% - 45%. (Attachment 8) On an annualized (4 years) basis that is an increase from 6.68% - 7.79% - 8.78% - 9.73%. That equates to change in market expectations of more than 3.0% per year. Absent some historic event, investor long term expected returns for the market are not so volatile as to increase by 300 basis points per year over a 3 week period of time.

Ms. Ahern's analysis also overstates the dividend yield. Value Line's estimate of the dividend yield is for dividend paying stocks only, and excludes non-dividend paying

stocks. It is inappropriate to combine a median estimate of market appreciation that includes both dividend and non-dividend paying stocks with a median dividend yield that excludes non-dividend paying stocks and includes only dividend paying stocks.

Q: On page 25 of her rebuttal testimony in Twin Lake's prior rate case, Cause No. 42488, Ms. Ahern argued that your criticism of Value Line's 3-5 year Appreciation Potential was "disingenuous" because "in arriving at his recommended 9.0% common equity cost rate for Twin Lakes, he has relied, in part, upon Ms. Murphy's DCF analysis using Value Line growth rates, including projected growth rates in EPS, DPS, and BVPS." She further asserts that both the appreciation potential and the projections in EPS, DPS, and BVPS are generated using the same economic model. Is Ms. Ahern's argument compelling?

A: No. There are several reasons why it is reasonable to rely in part, on Value Line's (company) estimates of projected EPS, DPS, and BVPS to estimate (g) in a DCF analysis, while simultaneously, expressing concerns about the use of Value Line's 3-5 year Median Appreciation Potential. First, in my DCF analysis I have averaged Value Line's forecasted growth in EPS, DPS and BVPS with historical growth in EPS, DPS and BVPS. Second, one can remove outliers when one uses individual company growth rates, the Value Line Median Appreciation Potential is an aggregate number and I cannot remove outliers from that number. Next, the Value Line Median Appreciation Potential seems to be more volatile than the estimate of (g) based on Value Line data. As discussed above, a forecast based on the Value Line Median Appreciation Potential could have changed by over 300 basis points in less than one month. I do not recall ever seeing such a change in a water industry wide estimate of (g) based on Value Line data. Finally, there are other sources of data that support Value Line's forecasted growth rates in EPS, such as Zacks and Reuters.

Q: How do some of the other sources of beta you reviewed compare to Value Line's beta?

A: As discussed earlier in my testimony, the other sources of beta I reviewed present a much lower estimate of beta for the companies in the proxy group. There are different ways to estimate beta and different methodologies will lead to different estimates of beta.

Q: Please discuss your concerns with Ms. Ahern's ECAPM analysis.

A: The ECAPM is a modification to the traditional CAPM based on the opinion that the results of a CAPM analysis are biased downward for companies with a beta of less than 1.0 and biased upward for companies with a beta that is greater than 1.0. However, the use of adjusted beta accomplishes the goal that the ECAPM attempts to fix. The use of adjusted beta increases the beta for companies with a beta below 1.0 and decreases beta for companies with a beta that is above 1.0. Ms. Ahern's ECAPM analysis uses Value Line betas. Value Line adjusts their raw beta to adjusted beta through the following formula: Adjusted beta = 0.35 + 0.67* raw beta. Since Ms. Ahern's analysis already uses adjusted beta, I believe that her use of the ECAPM with an adjusted beta is a redundant adjustment.

Q: In Cause No. 42359 Dr. Morin presented an ECAPM analysis in his direct testimony. Did the IURC accept the results of his ECAPM analysis in PSI's last rate case?

A: No. On page 48 of its final Order in Cause No. 42359 the IURC stated as follows:

> We find nothing presented in this Cause has changed our prior determination that ECAPM is not sufficiently reliable for ratemaking purposes and hereby reject the model in this proceeding.

MS. AHERN'S RISK PREMIUM MODELS

Q: Please discuss Ms. Ahern's Risk Premium models.

A: Ms. Ahern performs two risk premium models. She performs one on her AUS proxy group and one on her Value Line proxy group. The results of her risk premium analysis can be seen on PMA 10 page 1 of 9. Her two risk premium models produce estimates of 10.9% and 11.0%.

In her risk premium model Ms. Ahern estimates an average equity risk premium of 4.5% over "A" rated utility bonds for her AUS proxy and 4.6% over "A" rated utility bonds for her Value Line proxy. To derive her average risk premiums Ms. Ahern calculates one risk premium based on "the total market return using the beta approach" (PMA-10, page 6 of 9) [4.5% AUS proxy group and 4.7% Value Line proxy group][4] and a second risk premium based on "a study using the holding period returns of public utilities with "A" rated bonds" (PMA 10, page 8 of 9) [4.4% both proxy groups]. Most of the criticisms I made regarding Ms. Ahern's CAPM analysis also apply to her Risk Premium analysis.

4. Note Ms. Ahern's 4.5% and 4.7% risk premiums are an average of historical and forecasted risk premiums (PMA-10 page 6 of 9).

Q: Please explain how the concerns you discussed above apply to Ms. Ahern's risk premium analysis?

A: As described above, Ms. Ahern calculates three risk premiums that are compressed into a single risk premium. I will first discuss Ms. Ahern's 4.5% risk premium which is derived from a historical risk premium of 6.2% and a forecasted risk premium of 6.1%. This leads to an average risk premium of 6.2% which is multiplied by a beta of .72 and results in Ms. Ahern's beta adjusted risk premium of 4.5%. The 6.1% forecasted risk premium starts with the same 12.0% forecasted market return that Ms. Ahern derived from Value Line's estimated Median Price Appreciation Potential used in her CAPM analysis. As described above, I believe that Value Line's Market Appreciation Potential is not a reliable estimate of market expectations, provides results that are above earned returns for the entire market and thus it should not be used to estimate cost of equity.

I also have concerns with Ms. Ahern's 6.2% historical market risk premium. The 6.2% market risk premium is based solely on an arithmetic mean return on large company common stocks of 12.3% and an arithmetic mean total return on high grade corporate bonds of 6.1%. In this analysis Ms. Ahern ignores the geometric mean calculation. The geometric mean return on large company common stocks was 10.4% and the geometric mean return on high grade corporate bonds was 5.9% (Stocks Bonds Bills and Inflation 2006 Year book Valuation Edition – Ibbotson Associates)[5]. Thus, when a geometric mean risk premium of 4.5% is averaged with

5. Ms. Ahern uses Ibbotson to obtain her Large Company stock returns and Mergents for her corporate bond returns. I have used Ibbotson for both my stock and bond returns. This is not a criticism of Ms. Ahern's source

the arithmetic risk premium of 6.2% it results in an average risk premium of 5.35% [6.2% + 4.5] / 2 = 5.35%). When a 5.35% risk premium is multiplied by betas of .72 and .76 it results in a "Beta Adjusted Risk Premium" of 3.852% and 4.066%.[6]

Q: Do you also have concerns with Ms. Ahern's risk premium analysis which uses "holding period returns of public utilities"?

A: Yes. Ms. Ahern's risk premium analysis based on "Holding Period Returns of Public Utilities" (PMA 10, page 8 of 9) also relies solely on an arithmetic mean return calculation and ignores the geometric mean return. If one calculates a geometric mean, it results in an average return for the Standard & Poor's Public utility Index of 8.65% instead of 11.0%. A geometric mean calculation on "S&P A rated Public Utility Bond Yields" results in a 6.55% average return instead of a 6.6%. While the arithmetic mean return of the Standard & Poor's utility index compared to "A rated utility Bonds" is 4.4% the geometric mean return is only 2.10%. An average of the two risk premiums results in a 3.26% risk premium. Moreover, Ms. Ahern uses annual yields instead of total returns for the "S&P A rated utility bond Yields" to estimate a risk premium. This is similar to the concern I addressed when responding to Ms. Ahern's CAPM analysis, when she uses income returns instead of total returns. The risk premium here should be estimated by subtracting total returns from the "S&P A rated utility bond Yields" from the total returns on the Standard & Poor's Public utility Index and not annual yields from total returns.

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of data. I do not have access to Mergents' data and this is simply an explanation that there is not an exact match on data sources for corporate bond returns.

6 . For this calculation I have relied on Ms. Ahern's betas.

Q: Please discuss some of your theoretical concerns regarding the Risk Premium model.

A: The risk premium model assumes a stable risk premium that will remain stable over time. As mentioned earlier in my testimony there is growing evidence that the expected risk premium is lower than the historical risk premium. Despite the financial literature that supports the opinion that forecasted market risk premiums are lower than one estimated from historical evidence, Ms. Ahern's analyses derive forecasted market risk premiums that are higher than suggested by the historical evidence.

Q: In addition to the articles cited earlier in your testimony is there other evidence that supports the opinion that the historical risk premium is <u>not</u> an appropriate measure to use as a forecast?

A: Yes. In an article titled <u>What Risk Premium is "Normal"</u> by Robert Arnott and Peter L. Bernstein (Copyright 2002) the authors assert that the historical 5% risk premium for stocks relative to government has never been a realistic expectation. The article states on page 1 as follows:

> We are in an industry that thrives on the expedient of forecasting the future by extrapolating the past. As a consequence, investors have grown accustomed to the idea that stocks "normally" produce an 8.0% real return and a 5% risk premium over bonds, compounded annually over many decades (footnote included at the end of my testimony)[1]
>
> ...Both figures are unrealistic from current market levels. Few have acknowledged that an important part of the lofty real returns of the past has steamed from rising valuation levels and from high dividend yields which have since diminished. As this article will demonstrate, the long-term forward-looking risk premium is nowhere near the 5% of the past; indeed, it may well be near-zero today perhaps even negative.[3] Similarly, the long-term forward-looking real return from stocks is nowhere near the history's 8%. Our argument will show

> that, bearing unprecedented economic growth or unprecedented growth in earnings as a percentage of the economy, real stock returns will probably be roughly 2-4%, similar to bonds. Indeed, even this low real return figure assumes that current near-record valuation levels are "fair" and likely to remain this high in the years ahead. "Reversion to the mean" would push future returns lower still.

On the following page the article further states:

> A 5% excess return on stocks over bonds, earned over very long spans, compounds so mightily that most serious fiduciaries would not even consider including bonds in a portfolio with a horizon of more than a few years: the probabilities of stocks outperforming bonds would be too high to resist – if they believed stocks were going to earn a 5% "risk premium"[5]

(Citation from article included at the end of my testimony)

On page 8, the article discusses a series of "historical accidents" that the authors believe are not likely to repeat themselves that has caused the premium that stocks have earned over bonds during the last 75 years to exceed what investors expected the premium to be. For example, after World War II expected inflation became the norm as part of bond valuations. "This created a one-time shock to bonds that decoupled nominal yields from real yields and drove nominal yields higher, even as real yields fell." Next, the authors assert that: "Stocks have gone from a valuation level of 18 times dividends to over 70 times dividends. This four-fold increase in the value assigned to each dollar of dividends contributes 1.5% to the annual returns over the last 75 years, even though the entire increase occurred in the last eighteen years of the period (we last saw 5.1% yields in 1984). This explains fully one-third of the seventy-five year excess return." Finally, the authors assert as follows:

> The U.S. has fought no wars on its own soil, nor have we experienced revolution. Four of the fifteen largest stock markets in the world in 1990 suffered total loss of capital -100% return, at some point in the past century; China, Russia, Argentina and Egypt. Two others came close: Germany (twice) and Japan. U.S. investors in early 1926 would not have counted on this likelihood as "zero." Nor should today's true long-term investor.

Q: Has Dr. Ibbotson commented on the risk premium?

A: Yes. In an article titled The Supply of Stock Market Returns by Roger Ibbotson and Peng Chen (June 2001), the authors contest assertions that the market risk premium is negative or close to zero. However, the article asserts that historical data does in fact overstate the expected risk premium. On page 15 the article states as follows:

> The equity risk premium is estimated to be about 4% in geometric terms and 6% on an arithmetic basis. This estimate is about 1.25% lower than the straight historical estimate.

Thus, while criticizing the contention that the market risk premium compared to risk free bonds is close to zero or negative, the article supports the notion that historical data overstates a forecasted market risk premium.

Q: Did Alan Greenspan comment on the market risk premium?

A: Yes. In a speech made on October 14, 1999 Chairman Greenspan stated as follows:

> That equity premiums have generally declined during the past decade is not in dispute. What is at issue is how much of the decline reflects new, irreversible technologies, and what part is a consequence of a prolonged business expansion without a significant period of adjustment. The business expansion is, of course, reversible, whereas the technological advancements presumably are not.

Q: Would the concerns you discussed above apply to Ms. Ahern's forecasted risk premium.

A: Yes. Ms. Ahern's forecasted risk premium produces a risk premium that is greater than the historical average. Regardless of the source of data, the contentions put forth above support the opinion that the risk premium in the future will be less than what has been earned in the past. I believe that opinion holds true regardless of how one estimates a risk premium. Thus, I believe Ms. Ahern's forecasted risk premium overstates future expectations.

Q: Would the concerns you discussed above about the use of a historical risk premium to estimate a forecasted risk premium also apply to a CAPM analysis?

A: Yes. The Capital Asset Pricing Model is a form of the Risk Premium model. Thus, any criticisms about the use of historical data to forecast a future risk premium also apply to a CAPM analysis.

Q: Please summarize your concerns regarding the Risk Premium model.

A: Like her CAPM analysis, Ms. Ahern's Risk Premium model relies solely on an arithmetic mean return to estimate a historical risk premium. Also it relies on Value Line's Appreciation Potential to estimate a forecasted market risk premium. Both of these methods employed by Ms. Ahern overstate the expected market return and subsequent market risk premium. Also, there seems to be significant controversy surrounding the use of historical data to forecast a market risk premium. As discussed above some analysts believe that a forecasted market risk premium is close to zero. While Dr. Ibbotson contests those assertions, he also agrees that the

historical data overstates the future risk premium. If one accepts the premise that risk premium will be lower in the future than it has been in the past, then Ms. Ahern's risk premium models overstate the cost of equity.

Q: In both Ms. Ahern's CAPM and Risk Premium analysis, Ms. Ahern uses forecasted interest rates. Do you agree with Ms. Ahern's use of forecasted interest rates?

A: No. Ms. Ahern relies on data from Blue Chip Financial Forecasts (BCFF) to obtain current and forecasted interest rates. BCFF provides forecasts of interest rates over the next 6 quarters. For example, a copy of page 2 from the October 1, 2006 BCFF is included in Ms. Ahern's Schedule PMA 10, page 7 of 9 (Also included as page 1 of Attachment 9 to my testimony) provides forecasted interest rates through the first quarter of 2008. Ms. Ahern's use of forecasted interest rates increases the results of her Risk Premium and CAPM analysis by approximately 20-40 basis points.

I do not believe that a forecast of what long term interest rates might be over the next 6 quarters is more appropriate to use than current yields. BCFF's forecasted interest rates were 20 – 50 basis points higher than the current rates at that time. For example, according to the publication included by Ms. Ahern the current yield on 10 year US Treasury bonds on September 22, 2006 was 4.71%, but was forecasted to increase to 4.9% in both the first and second quarter of 2007. An updated copy of the same publication (Page 2 of Attachment 9 to my testimony) shows a current yield on March 23, 2007 for 10 year US Treasury bonds is 4.58%. That represents a decline in rates of 13 basis points and not an increase of 19 basis points as forecasted by

BCFF. Moreover, the updated copy still forecasts an increase in yields for 10 year US Treasury bonds to 4.9% by the third quarter of 2008.

Q: But don't you need to use forecasted interest rates to make the models forward looking?

A: No. When one purchases long-term debt, the purchaser is making a forecast. The purchaser anticipates factors such as inflation over the life of the loan and uses those factors to determine the appropriate purchase price and subsequent yield of his or her investment. The purchase price produces a yield that the investor is willing to accept over the life of the loan. Thus, a current yield is already a forward looking yield over the investment horizon.

When one forecasts that interest rates are going to increase the forecaster is, in effect, predicting that the price of the bond will decrease. If one strongly believed that the price of the bond is going to decrease in the near term, the purchaser would decrease his current purchase price and the spread between the forecasted yield and current yield would decrease. I think that there is a tendency amongst some analysts to take a "conservative" approach and assume that when interest rates are low the same interest rates are more likely to increase in the future. However, the best indication of what investors think interest rates will do is how they vote with current dollars. The current purchase price represents a statement with dollars as to what the investor believes will happen over his or her investment horizon.

Q: But, isn't it inconsistent to combine current interest rates with forecasted market risk premiums?

A: No. As I described in my previous answer today's current purchase price is a forecast and is the best forecast depicting investor expectations. Moreover, I am not convinced that a forecast of what long term bonds will yield in 6 to 18 months is more appropriate than a current yield. It does not provide a better match.

MS. AHERN'S COMPARABLE EARNINGS METHODOLOGY

Q: Please discuss your concerns with Ms. Ahern's Comparable Earnings (CE) analyses?

A: Ms. Ahern's calculates the average earned return and projected return for a group of 99 companies which she asserts are similar in risk to her AUS proxy group of 6 water utilities and for a group of 100 companies that she asserts is similar in risk to her Value Line group of 4 water utilities. Ms. Ahern uses earned return on net worth from 2001 – 2005 and 5-year projected return on net worth to derive her estimate of cost of equity for this model. Ms. Ahern's Comparable Earnings analyses produce cost of equity estimates of 14.0% and 14.1%, and are 310 basis points greater than the results of her next highest model. Ms. Ahern's CE analyses do not provide meaningful insight into Petitioner's cost of equity. I have both general and specific concerns with Ms. Ahern's analyses as well as theoretical concerns about the Comparable Earnings methodology. First, I will discuss my general concerns followed by my specific concerns and then conclude with my theoretical concerns about the CE model.

Ms. Ahern's CE analyses is the only model that shows an increase in Petitioner's cost of equity when compared to her testimony in Petitioner's last rate case.

	42882	43187	Change
DCF Model	9.9%	9.6% - 9.9%	0 to -30 bp
Risk Premium	11.2%	10.9% - 11.0%	-30 to -20 bp
CAPM	10.8%	10.6%	-20 bp
CE	13.6%	14.0% - 14.1%	+40 to 50 bp

Thus, her CE model moved in the opposite direction of her other models.

Q: Please discuss your specific concerns regarding Ms. Ahern's CE analysis.

A: Ms. Ahern did not screen for dividends or percentage of long term debt to form her comparable earnings proxy groups. Water utilities tend to have low business risk which allows them to incur a larger degree of financial risk. Thus, water utilities tend to carry a large proportion of long term debt in their capital structure. Regardless of any other screening criteria used by Ms. Ahern a company that has no or little long term debt is not comparable to either of her water company proxy groups. The same theory applies to dividends. Water utilities pay a relatively large percentage of their earnings as dividends to their shareholders. Large dividend payments reflect the lower risk of the water industry. According to Ms. Ahern's analysis her water company proxy groups have a five year average payout ratio of 77.47% (AUS proxy group, PMA-3 page 1) and 67.08% (Value Line proxy group, PMA-4 page 1). Again, regardless of any other screening criteria employed by Ms. Ahern, a comparable earnings analysis that includes companies that pay no or little dividends

will not be comparable to the water company proxy groups used by Ms. Ahern in her analysis.

Ms. Ahern's CE analyses removes companies that she believes does not provide a meaningful rate of return on net worth and does not include any company whose earned return on net worth is greater than 20.0% or less than or equal to 8.4% (footnote [8] PMA-12 page 5). Thus, the companies in Ms. Ahern's comparable earnings analyses must have an earned return on net worth equity between 8.5% and 20.0%. As mentioned earlier in my testimony, there are several publications that have forecasted a market return at or near 8.0% and Ms. Ahern's floor of 8.4% is too high given these market projections. Moreover, in her DCF analysis PMA-6, footnote 7, Ms. Ahern eliminates results above 12.0% because "in her opinion it is unlikely that a water company would be authorized a return on common equity of 12.0% or greater in the immediate future." Thus, in her DCF analysis Ms. Ahern uses a 12.0% ceiling, yet in her CE analyses Ms. Ahern uses a 20.0% ceiling. If Ms. Ahern used the same ceiling in her CE analyses that she used in her DCF analysis, the results of her CE analyses would have been at least 200 hundred basis points lower than the results provided in her testimony. The maximum result or her CE analyses could have been is 12.0%, which is 200 basis points lower than Ms. Ahern's estimate of 14.0% and 14.1%for her CE analyses.

Additionally, Ms. Ahern's analyses rely on Value Line betas. As indicated earlier in my testimony, Value Line produces higher estimates beta of then the other sources I

reviewed. Had Ms. Ahern used another source (such as Reuters' betas) her water proxy group(s) would have a lower average beta. This in turn, would have led Ms. Ahern to form Comparable Earnings proxy groups with a lower average beta. If the Comparable Earnings proxy groups had a lower average beta, the companies in the group would also presumably have lower earned returns on net worth. This in turn would produce a lower estimated cost of equity.

Q: Please discuss some of theoretical concerns that apply to all comparable earnings analyses.

A change in market conditions such as interest rates will influence investor expectations, and the results of both a CAPM and/or DCF analysis will, in turn, quickly react to reflect the change in investor expectations. Historical earned returns do not react to changes in market conditions. In past cases I have seen the comparable earnings methodology produce increasing returns during periods of declining capital costs. Finally, Ms. Ahern's analysis assumes that operating returns (accounting returns) can be used to estimate market returns. I am not convinced it is appropriate to rely on accounting returns to estimate cost of equity.

Q: Has the Commission commented on models that show increasing rates of return during periods of stable or declining capital costs?

A: Yes, they have. In Cause No. 42029, Indiana American Water Company the IURC stated on page 37 as follows:

> Beyond some mechanical deficiencies in the results of Dr. Boquist's model, any model that shows increasing rates of returns during periods of stable or declining capital costs raises questions.

Q: Please summarize your concerns regarding Ms. Ahern's Comparable Earnings Analysis.

A: Ms. Ahern's Comparable Earnings analyses include companies that have little or no debt and/or don't pay dividends. These companies are not comparable to either Petitioner or Ms. Ahern's water company proxy groups. While Ms. Ahern excludes companies with forecasted and earned returns over 20.0%, her analysis still includes companies whose forecasted or earned returns are well above any reasonable estimate of cost of equity for the water utility industry. Finally, the Comparable Earnings model does not properly react to changes in investor expectations and can move in the opposite direction of capital costs. For all of these reasons the Commission should reject Ms. Ahern's Comparable Earnings analyses.

CONCLUSIONS

Q: Do you have any final comments about Ms. Ahern's analysis?

A: Yes, I do. To the extent that I have not commented on areas of Ms. Ahern's analysis, it should not be viewed as an acceptance of her analysis or position

Q: Please review the most significant differences between you and petitioner in your estimation of petitioner's cost of equity.

A: Our cost equity estimates differ by 235 basis points (9.15% vs. 11.50%). Most of our differences can be explained by the following factors:

1: Ms. Ahern uses a Comparable Earnings model that overstates cost of equity and includes companies that are not comparable to the water industry. Ms. Ahern's Comparable Earnings model is 310 basis points higher than her next highest model and adds approximately 90 basis points to the high end of her analysis.

2: Ms. Ahern relies solely on the arithmetic mean and ignores the geometric mean to estimate her historical market risk premium in both her CAPM and Risk Premium analyses. Ignoring the geometric mean risk premium overstates the results of her CAPM and Risk Premium analyses.

3: Ms. Ahern relies too heavily on intermediate term forecasted growth in EPS in her DCF analysis and subsequently uses an inappropriately high growth rate.

4: Ms. Ahern overstates the forecasted market risk premium in both her CAPM and Risk Premium analyses.

Q: Do you have any final comments?

A: Yes. Over the last three years the United States has seen large increases in short term interest rates. These increases have received significant attention in the press and have created an impression that capital costs must be higher today then they were three years ago. However, it is important to note that long term interest rates have not seen the same increases that US markets have seen in short term interest rates. As discussed earlier in my testimony long term interests are at similar levels as they were in Petitioner's last rate case. Moreover, Petitioner's cost of long term debt has decreased from 7.24%, proposed in Cause 42488 to 6.58% in this cause. That is a decrease of approximately 65 basis points.

Thus, while my recommended cost of equity of 9.15% may be lower than costs of equity this Commission has awarded in past rate cases, I believe that it is reasonable, supported by the evidence and is well founded.

Q: Does this conclude your testimony?

A: Yes, it does.

Table of Citations:

Page 15	Footnote 15: Robert D. Arnott and Peter L. Bernstein "What Risk Premium is Normal? Financial Analysts Journal, 58 (2) March/April 2002): 64-85
	Footnote 16: Source Council of Economic Advisors, Economic Report of the President, 2002.
	Footnote17: See for example, Vijay Kumar Chopra, "Why So Much Error in analysts' Earnings Forecasts?" Financial Analysts Journal, 54(6) November/December 1998): 35-42.
Page 16	Footnote 18: See Masakao N. Darrough and Thomas Russal, "A Positive Model of Earnings Forecasts: Top Down Versus Bottom Up." Journal of Business, 75(1) (January 2002) 127-52.
Page 21:	Footnote 4 of the text cites to Ibbotson Associates, Stocks, Bonds, Bills and Inflation 1993 *Yearbook* (Chicago, 1993).
Page 22:	Footnote 5 of the text cites A. Lo and C. MacKinlay, "Stock market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test," *Review of Financial Studies* (Spring 1988): 41-66; E. Fama and K. French, "Dividend Yields and Expected Stock Returns, "*Journal of Financial Economics* (October 1988): 3-25; J. Poterba and L. Summers, "Mean reversions in Stock Prices: Evidence and Implications, "*Journal of Financial Economics* (October 1988): 27-59.
	Footnote 14 of the text cites Mehra and Presscot (1985). The relatively large size of the historical U.S. equity premium relative to that predicted by theory, given estimates of investors' risk aversion, is know as the "equity premium puzzle" The geometric mean was also the choice of Dimson, Marsh, and Staunton (2000) in their authoritative survey of world equity markets.
Page 27	Footnote 2 of the text cites Gebhardt, Lee, and Swaminathan (forthcoming) find similar results when estimating firm-specific discount rates, rather than the market-level discount rates considered in this paper.

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Footnote 1: The "bible" for the return assumptions that drive our industry is the work of Ibbotosn Associates, building on the pioneering work of Roger Ibbotson and Rex Sinquefield [1976]. The most recent update of the annual Ibbotson Associates data shows returns for stocks, bonds, bills and inflation of 11.0%, 5.3%, 3.8% and 3.1% respectively. This implies a real return for stocks of 7.95% and a risk premium over bonds of 5.7%, both measured over a very long 75-year span. These data shape the expectations of the actuarial community, much of the consulting community and many fund sponsors.

Footnote 3: See Robert D. Arnott and Ronald J. Ryan, "the death of the Risk Premium," Journal of Portfolio Management, Summer, 2001.

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Footnote 5: For instance, if our ancestors could have earned a mere 1.6% real return on a $1 investment from the birth of Christ in roughly 4 BC to today, we would today have enough to buy more than the entire world economy. Similarly, the island of Manhattan was ostensibly purchased for $24 of goods, approximately the same as an ounce of gold when the dollar was first issued. This modest sum invested to earn a mere 5% real return would have grown to over $20 billion in the 370 years since the transaction. At an 8% real return, as stocks have earned from 1926-2000 in the Ibbotson data, this small investment would now suffice to buy more than the entire world economy.

Economic Research

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Survey of Professional Forecasters

Release Date: February 13, 2007

A complete writeup of this survey, including all tables, is available here in .pdf format.

First Quarter 2007

Forecasters Provide Views on New Measures of Inflation and Long-Term Expectations for Inflation Decline

Two measures of core inflation in the U.S. economy will decelerate in 2007 and hold nearly steady over the following two years, according to 49 forecasters surveyed by the Federal Reserve Bank of Philadelphia. Measured on a fourth-quarter over fourth-quarter basis, core CPI inflation will fall to 2.3 percent this year and hold steady at that rate in 2008 and 2009. An alternative measure of core inflation, the rate of change in the price index for personal consumption expenditures (PCE), is also expected to decelerate, to 2.0 percent, in 2007 before rising to 2.1 percent in 2009. Core inflation measures the rate of change in a price index that excludes the prices of food and energy. This is the first Survey of Professional Forecasters to report projections for core inflation.

This survey also incorporates, for the first time, projections for inflation in the headline PCE price index. Like the headline CPI, which has been included in the survey since 1981, this index incorporates food and energy prices. The forecasters see headline PCE inflation averaging 2.1 percent this year before falling to 2.0 percent in 2008 and 2009. A difference in the outlook for inflation in a headline price index and the corresponding core price index reflects the influence of recent past or expected future changes in the prices of food and energy. The table below summarizes the current outlook for inflation and shows little difference between the headline and core forecasts in 2008 and 2009. On an annual basis, only the projection for core PCE inflation shows a hint of acceleration, with the projection rising from 2.0 percent in 2008 to just 2.1 percent in 2009. Notably, the forecasters have trimmed their forecasts for headline CPI inflation in this survey. Previously, they thought this measure would average 2.6 percent in 2007 and 2.5 percent in 2008.

Over the next five years, they expect headline CPI inflation to average 2.40 percent (annual rate). The forecasters peg CPI inflation over the next 10 years at an annual rate of 2.35 percent, down from the rate of 2.50 percent they reported in the last survey. Readers of this survey know that this is a surprising revision because the forecasters have been projecting 10-year annual average inflation of 2.50 percent since 1998. Using the responses of each forecaster available on our web page, we conducted an investigation of the revision by comparing the responses of this survey to those of the last one. There were 38 forecasters who participated in both surveys. Of these 38, seven raised their estimates in this survey, but 16 cut their estimates. The mean and median amounts by which the seven raised their estimates were 0.21 and 0.10 percentage point, respectively. The mean and median amounts by which the 16 lowered their estimates were 0.17 and 0.10 percentage point, respectively. When we recomputed the median estimate for each survey, using only the 38 responses of those who participated in both surveys, we found a long-run projection of 2.50 percent in the survey of 2006 Q4, the same estimate we reported last quarter for the full sample, and 2.40 percent in this survey, very close to the median estimate of 2.35 percent in this survey's full sample. We conclude that changing views on the long-run inflation outlook among those participants who submitted projections in both surveys accounts for some of the downward revision to the full-sample median estimates. Notably, eight forecasters participated in this survey who did not also participate in the previous one. The median estimate of these eight forecasters is 2.05 percent. This suggests that a changing composition of the panel of forecasters over the last two surveys also contributes to the downward revision to the consensus long-term CPI inflation outlook.

Headline PCE inflation is expected to average 2.10 percent over the next five years. Ten-year average PCE inflation will be 2.00 percent.

The current survey also marks the beginning of two new questions on probability ranges. We now ask the forecasters to provide their estimates of the chance that fourth-quarter over fourth-quarter core CPI and PCE inflation will fall into each of 10 different ranges in the each of the next two years. This helps analysts to assess the degree of uncertainty surrounding the forecasters' annual estimates of core inflation, discussed above. For core PCE inflation, the forecasters think there is a 38 percent chance inflation will be between 2.0 and 2.4 percent in 2007. There is also a substantial chance, nearly 35 percent, inflation will average between 1.5 percent and 1.9 percent.

Forecasters See Higher Growth, Stronger Labor Market in 2007
The forecasters have raised their estimates for real GDP growth this year. On a year-over-year basis, real GDP is seen growing 2.8 percent this year, up from the forecasters' previous estimate of 2.6 percent. A slightly stronger labor market will accompany the outlook for growth. Nonfarm payroll employment will increase at a rate of 135,000 jobs per month in 2007, up slightly from 119,000 previously, while the unemployment rate will average 4.7 percent, down from 4.8 percent.

The forecasters see real GDP growing 3.0 percent in 2008 and the unemployment rate rising to 4.8 percent.

Forecasters Trim Estimates for Long-Run Growth in Output and Productivity
In first-quarter surveys, the forecasters provide their long-run projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets. Over the next 10 years, the forecasters now think real GDP will grow at an annual rate of 3.00 percent, down from their previous estimate of 3.20 percent. Labor productivity is seen growing 2.20 percent at an annual rate over the same period, down from 2.44 percent. The forecasters have raised their estimate of the returns to stocks and Treasury bills, to 7.50 percent and 4.50 percent, respectively, but they continue to think 10-year Treasury bonds will return 5.00 percent.

The Federal Reserve Bank of Philadelphia thanks the following forecasters for their participation in recent surveys:

Scott Anderson, Wells Fargo and Company; **Robert J. Barbera,** ITG Inc.; **David W. Berson**, Fannie Mae; **Joseph Carson,** Alliance Capital Management; **Gary Ciminero, CFA**, Rhode Island House Policy Office; **Richard DeKaser**, National City Corporation; **Rajeev Dhawan**, Georgia State University; **Doug Duncan,** Mortgage Bankers Association; **Michael R. Englund**, Action Economics, LLC; **Gerard F. Fuda**, Independent Economist; **Stephen Gallagher**, Societe Generale; **James Glassman**, JP Morgan Chase & Co.; **Global Insight**; **Keith Hembre,** First American Funds; **David Huether,** National Association of Manufacturers; **William B. Hummer**, Wayne Hummer Investments; **Saul Hymans**, **Joan Crary**, and **Janet Wolfe,** RSQE, The University of Michigan; **Fred Joutz**, Benchmark Forecasts and Research Program on Forecasting, George Washington University; **Kurt Karl**, Swiss Re; **Dr. Irwin Kellner**, Hofstra University/MarketWatch/North Fork Bank; **Thomas Lam,** UOB Group; **L. Douglas Lee,** Economics from Washington; **Mickey D. Levy**, Bank of America; **Joseph Liro**, Stone & McCarthy Research Associates; **John Lonski**, Moody's Investors Service; **Dean Maki,** Barclays Capital; **Drew Matus**, Lehman Brothers; **Edward F. McKelvey**, Goldman Sachs; **Jim Meil**, Eaton Corporation; **Anthony Metz,** Pareto Optimal Economics; **Michael Moran**, Daiwa Securities America; **Joel L. Naroff**, Naroff Economic Advisors; **Mark Nielson, Ph.D.**, MacroEcon Global Advisors; **Michael P. Niemira**, International Council of Shopping Centers; **Martin A. Regalia**, U.S. Chamber of Commerce; **David Resler**, Nomura Securities International, Inc.; **David Rosenberg**, Merrill Lynch; **John Ryding,** Bear, Stearns, and Company, Inc.; **David F. Seiders**, National Association of Home Builders; **Xiaobing Shuai, Ph.D.**, Chmura Economics & Analytics; **Allen Sinai**, Decision Economics, Inc; **Tara M. Sinclair**, Research Program on Forecasting, George Washington University; **Sean M. Snaith, Ph.D.**, University of Central Florida; **Constantine G. Soras, Ph.D.**, Verizon Communications; **Neal Soss**, Credit Suisse; **Stephen Stanley,** RBS Greenwich Capital; **Susan M. Sterne**, Economic Analysis Associates, Inc.; **Thomas Kevin Swift**, American Chemistry Council; **David Teolis,** General Motors Corporation; **Lea Tyler**, Oxford Economics USA, Inc.; **Albert M. Wojnilower**; **Richard Yamarone**, Argus Research Group; **Mark Zandi**, Economy.com; **Ellen Beeson Zentner**, Bank of Tokyo-Mitsubishi UFJ, Ltd.

This is a partial list of participants. We also thank those who wish to remain anonymous.

The Philadelphia Fed's Survey of Professional Forecasters was formerly conducted by the American Statistical Association (ASA) and the National Bureau of Economic Research (NBER) and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

For further information about the Survey of Professional Forecasters, contact:

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Subscribe to the survey through our e-mail notification system. This HTML version contains partial results of the survey. More detailed tables are available elsewhere on our website.

NEXT SURVEY RELEASE (2007 Q2): May 14, 2007

Return to the *Survey of Professional Forecasters*.

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A Long-Term Perspective

Dow Jones Industrial Average, 1920-2005
(Quarterly Price Range)

2009-2011 Target Price Range (15,400 – 20,600)

Book Value Per Share x 3

Dividends Per Share x 30

Earnings Per Share x 15

Quarterly Stock Price Range

Shaded Areas Indicate Recessions

Average Annualized Rates, 50-Year Summary

	DJIA, Dividend + Capital Appreciation	P/E Ratio	Earnings Growth	Earnings as % of Price	Inflation Rate	AAA-Corp. Bond Yield
1 yr.	1.7%	17.9	-4.3%	6%	3.4%	5.7%
3 yrs.	11.2%	17.3	8.4%	6%	2.8%	5.6%
5 yrs.	2.0%	18.9	3.3%	5%	2.6%	6.1%
10 yrs.	9.8%	19.1	5.5%	5%	2.5%	6.6%
20 yrs.	13.1%	16.3	8.9%	6%	3.0%	7.6%
50 yrs.	10.3%	13.7	5.8%	7%	4.1%	7.5%

9% Forever?

That's economist Roger Ibbotson's forecast for stock market returns. HE'S BEEN RIGHT--very right--in the past. So how come some people think we shouldn't believe him anymore?

By JUSTIN FOX
December 26, 2005

FORTUNE

(FORTUNE Magazine) – In May 1974, in the depths of the worst bear market since the 1930s, two young men at a University of Chicago conference made a brash prediction: The Dow Jones industrial average, floundering in the 800s at the time, would hit 9,218 at the end of 1998 and get to 10,000 by November 1999.

You probably have a good idea how things turned out. At the end of 1998, the Dow was at 9,181, just 37 points off the forecast. It hit 10,000 in March 1999, seven months early. Those two young men in Chicago in 1974 had made one of the most spectacular market calls in history.

What became of them after that? One, Rex Sinquefield, went on to found a mutual fund company that now manages more than $80 billion. The other, Roger Ibbotson, kept making market forecasts, forecasts of long-run stock and bond returns that have become deeply woven into the fabric of American life. Simply put, if you believe that stocks are fated to return 10% on average over the long haul, Ibbotson is probably the reason why.

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It's hard to overestimate the influence of those numbers. The forecasts and historical return data churned out by Ibbotson Associates transformed the pension fund business in the late 1970s and 1980s, leading managers to make an epic shift out of bonds and into stocks. They formed the inescapable backdrop to the 1990s personal investing boom, as brokers, financial planners, and journalists endlessly repeated the Ibbotson mantra of double-digit stock market returns as far as the eye could see. Lately the Ibbotson forecasts have been finding their way into 401(k)s, as Ibbotson and other firms using similar methods build portfolios for those who opt not to build their own. Ibbotson even sells hundreds of thousands of charts each year showing how stocks build wealth over time--and beat the crap out of bonds.

All this means it's of more than academic interest that an academic debate has been raging for years now over the theories upon which Ibbotson and Sinquefield based their forecast in 1974, and which Ibbotson has followed since. Ibbotson, now 62, has taken some of the criticism to heart, and in the process ratcheted down his long-run forecast for stock returns from more than 10% a year to 9.27%. That alone was something of a shock for many of his clients, Ibbotson says. But a few critics think the real number may turn out to be just 5% or 6%. In that case stocks would barely outperform government bonds--an eventuality that would entirely rearrange the investing world yet again.

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The most important thing to understand about the forecast that Roger Ibbotson and Rex Sinquefield churned out in 1974 is that it wasn't an attempt to outsmart or outguess the market as Wall Street seers had traditionally done. Instead, Ibbotson and Sinquefield were simply trying to use the information already embedded in stock prices to, as they put it, "uncover the market's 'consensus' forecast." Their tools were a half-century of historical data and the bold new philosophy of stock market behavior that they had internalized as students at the University of Chicago's Graduate School of Business.

They did it at a time when theories batted about in Chicago classrooms really were changing the world, or were about to. In the early 1970s, Ibbotson says, "everything was going on at the University of Chicago." The professors on his Ph.D. dissertation committee included two future Nobel Prize winners (Merton Miller and Myron Scholes), another who would have won if he hadn't died before the Nobel committee got to him (Fischer Black), yet another whom many colleagues think should win the Nobel (Eugene Fama), and a father of Reagan-era supply-side economics (Arthur Laffer).

Not counting the Black-Scholes options-pricing formula and the Laffer curve, which don't have major roles in this drama, the biggest ideas at the Chicago Business School in the early 1970s were the efficient-market hypothesis and the capital asset pricing model. The gist of the efficient-market idea, as articulated in the 1960s by Eugene Fama, is that today's price is the best possible measure of a stock's value, and that nobody can reliably predict which way prices will be headed tomorrow. The capital asset model says that you nonetheless can predict long-run stock returns because they are a reward for taking risks, and those risks can be measured. While CAPM, as it is known, was devised elsewhere, Chicago's Fischer Black was among its most fervent adherents.

Ibbotson arrived on campus in 1968. He was a kid from the Chicago suburbs who studied math and physics at Purdue and got an MBA at Indiana University. After struggling in the workforce, he went to Chicago to earn a Ph.D. in finance and hit his stride. While still a student, he got a job managing the university's bond portfolio. Meanwhile his friend Sinquefield, a 1972 MBA working at a Chicago bank, was launching one of the first S&P 500 index funds for institutional investors (this when Vanguard was still but a gleam in Jack Bogle's eye). Chicago really was a heady place for young finance geeks in those days.

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Ibbotson and Sinquefield both needed up-to-date historical data on security prices for their work, and both knew that the professors who ran the Chicago business school's Center for Research in Security Prices (CRSP) were in no hurry to repeat the epic number-crunching exercise they had undertaken in the early 1960s to build a database of stock prices going back to 1925. So the two men took on the job of updating the CRSP (pronounced "crisp") stock database and assembling a similar price history for bonds and Treasury bills.

They presented their preliminary findings in May 1974 at one of the twice-yearly seminars that CRSP hosted to share the latest academic research with bankers, mutual fund managers, and the like. "Just getting the data was a coup," Ibbotson says. Then there was the forecast, suggested to them by Fischer Black. Black thought of using the data to calculate the additional return that investors had historically received for investing in risky stocks rather than in relatively safe government bonds. According to CAPM theory, this "risk premium" reflects something real and durable about the rewards investors demand for taking the chance of losing money. Real and durable enough, it seemed in 1974, to build a stock market prediction on.

Once Ibbotson and Sinquefield figured out the historical risk premium, all they had to do was add it to the prevailing risk-free interest rate (Treasury bonds or bills, depending on one's planning horizon) to get the "consensus" forecast of market returns. Actually they made it a little more complicated than that: When they finally published their work in 1976, they presented their forecast as the middle point of a wide range of different possible results. The mean forecast for the 25 years through 2000 was for 13% annual stock market returns, with 95% confidence that the return would be between 5.2% and 21.5%. (The actual return was 15%.)

"In some ways it was the first scientific forecast of the market," Ibbotson says proudly. Not everyone saw it that way at the time; some skeptics complained it was just a gussied-up extrapolation of the past into the future. But there turned out to be a ravenous hunger for such data. Both researchers were swamped with requests for more information and advice. For a while Ibbotson, by this time a very junior professor of finance at Chicago, just let the letters pile up unopened in a drawer in his office. In 1977 he decided to make a business out of his research project and started Ibbotson Associates. He also kept teaching at Chicago--until 1984, when his wife, health economist Jody Sindelar, got a job at Yale and he wangled an appointment there as a finance professor. Since then he's left the day-to-day management of the company, still based in Chicago, in the hands of others, while he remains its public face and chief researcher. Sinquefield, meanwhile, launched small-cap index fund manager Dimensional Fund Advisors with another Chicago finance graduate, David Booth, in 1981.

***

While Ibbotson Associates grew and prospered in the 1980s and 1990s, however, the theories upon which its forecasts are based began to crumble in the face of contradictory evidence. The initial onslaught came from skeptics of the efficient-market hypothesis like Ibbotson's Yale colleague Robert Shiller, who argued that investor mood swings drove stock prices too high or too low for years on end. The experience of the late 1990s confirmed to many that there was something to this. But Ibbotson says he can't base his forecasts on such arguments. "It's not that I believe markets are so efficient," Ibbotson says. "It's just that I don't want to use a mispricing to make predictions." He's trying to divine a middle-of-the-road consensus, not trot out a CNBC-style market call. Fair enough.

A harder-to-dismiss critique came from Mr. Efficient Markets himself, Ibbotson's dissertation advisor Eugene Fama. In a series of papers written with Dartmouth's Kenneth French, Fama has argued that the capital asset pricing model, or at least its 1970s corollary that the risk premium is constant, doesn't match the facts. "My own view is that the risk premium has gone down over time basically because we've convinced people that it's there," Fama says. Ibbotson's stock market forecasting model is thus a victim of its own success.

Ibbotson agrees that Fama has a point, and that he can no longer bank on the historical equity premium to predict future returns. The alternative he has come up with is an estimate based on fundamentals. He takes the 10.31% annual return on stocks from 1925 through the present and strips out the tripling of the market's price/earnings ratio that's occurred since then. "We think of that as a windfall that you shouldn't get again," he says. The drivers of stock returns that remain are dividends, earnings growth, and inflation. Make a forecast of future inflation using current bond yields, assume that dividend and earnings growth history will repeat themselves, and you get a long-run equity-return forecast of 9.27%. When Ibbotson and his company's director of research, Peng Chen, first ran the numbers in 2001, the gap between the new forecast and the one using the equity premium method was more than a percentage point. Because P/Es have dropped since then, the gap has shrunk. But Ibbotson's revised forecasting method doesn't insulate him from criticism any more than the old way. In fact, it invites new criticism.

The most persistent challenger has been Rob Arnott, a Pasadena money manager and editor of the Financial Analysts Journal, who thinks future equity returns could be below 6%. (See "Dueling Market Forecasts" chart.) The big difference between his forecast and Ibbotson's is that Arnott uses the current dividend yield (1.76%) as a starting point, while Ibbotson goes with the much higher long-term average yield (4.23%). Ibbotson believes the historical number provides a better picture of what investors think is ahead. He still relies on the assumption that markets are efficient, so current dividend yields must be low for a reason--his guess is that investors are expecting big growth in earnings (and dividends) in the future. Arnott, whose research has shown that low yields in the past were followed by slow earnings growth, thinks that's balderdash. "One of my biggest beefs with the academic community is the notion that theory is fact," he complains. "When they find evidence that contradicts the theory, instead of saying, 'Wonderful, let's improve the theory,' they throw it out because it conflicts with theory."

But the theoretical assumption that the market knows best is central to Ibbotson's whole forecasting endeavor, something even Arnott acknowledges. "In a sense Ibbotson is trying to infer what the consensus view is," Arnott says. "I'm trying to profit from that consensus." What Ibbotson is telling us is that the market still believes stocks will handily outperform bonds over the long haul. And if the market turns out to be wrong about that, it won't just be Roger Ibbotson who feels the pain.

FEEDBACK jfox@fortunemail.com

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Building the Future From the Past

WENDY BARROWS

BY ROGER G. IBBOTSON

Professor in the Practice of Finance, Yale School of Management

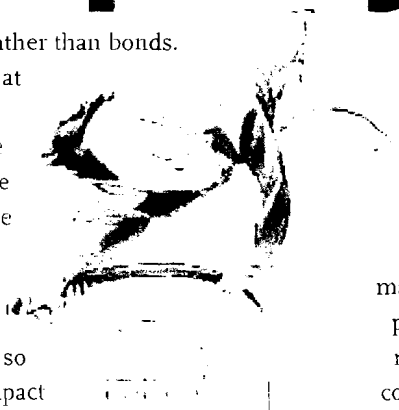
UNTIL THE LAST TWO YEARS, INVESTORS had not seen consecutive negative annual stock market returns since the 1970s. In contrast, during the 1980s and 1990s the market produced its best 20-year performance ever. But neither the last two years nor the last two decades are good predictors of the long run.

A forecast usually begins by comparing the expected return on stocks with that of a low-risk asset, such as U.S. government bonds. This difference is called the equity (stock) risk premium, because it is likely to be positive and represents the extra payoff that an investor demands (but does not always get) for investing in something risky (stocks) compared with something nearly risk-free (government bonds). Thus, the bond yield is our starting point, and adding the equity risk premium gives us the expected return on stocks.

Generally, the best way to get a sense of what the future may bring is to look at the past. After all, the past is our primary source of data. But, as you already know from recent market results, the stock market is quite volatile. The only way to get a good representation is to look back over a long period of time, so that the ups and downs of the market tend to cancel out and we get a reasonable average.

The compound average annual nominal rate of return (including inflation) for common stocks was 10.7 percent over the period 1926–2001. This return exceeded long-term U.S. Treasury yields by over 5 percent per year. That difference was the historical equity risk premium—the amount of extra return investors got over the last three-quarters of a century for investing in stocks rather than bonds.

Measuring Equity Risk



But looking at historical stock returns relative to bond income is not the whole picture. The bull market of the 1980s and 1990s had so much of an impact on stock prices that the price of stocks in the S&P 500® Index is almost 30 times the earnings of the same companies. This contrasts with a price/earnings (P/E) ratio closer to 10 back in the 1970s—and only about 14 over the whole 76 years. This growth in the P/E ratio is not expected to repeat in the future. Thus, to a certain extent, the stock market has outrun the underlying real earnings power of corporations.

A long-term forecast should not extrapolate the separation of the P/E ratio indefinitely. But today's high P/E ratios are not necessarily going to soon revert to historical levels, because the prices reflect the future outlook of investors—all those people and institutions that hold, buy, or sell stocks. In fact, if today's P/E ratio is higher than in the past, it has to mean one of three things: The price is now unrealistically high, people are willing to accept a much lower expected return for the risk of stocks, or the market is optimistic that the earnings per share growth of corporations will be higher than it was in the past. In fact, I believe in the market's optimism. Earnings per share will grow at faster rates for two reasons. First, corporations are paying out lower dividends and retaining more earnings. These extra retained earnings are reinvested back into firms. If the money is used productively, extra growth can be achieved.

continued on page 12

Stock Returns for a New Century

k Premium

BY JOHN Y. CAMPBELL

Professor of Applied Economics, Harvard University

WHAT RETURNS SHOULD INVESTORS expect the U.S. stock market to deliver on average during this century? Does the experience of the last century provide a reliable guide to the future?

Perhaps the simplest way to try to forecast future returns is to use some average of past realized returns, but there are serious difficulties with this approach. Stock returns are so variable that even an average measured over a century is an unreliable guide to the true long-term average. Also, if the expected future stock return is not constant, but changes over time, it can have a perverse effect on the average realized return: Consider what happens if the expected future stock return declines—perhaps because investors have become more comfortable with equity (stock) market risk and require a smaller compensation for bearing it. Investors' willingness to reduce their equity risk premium itself tends to drive up the price of stocks, causing an increase in realized returns. Thus, at precisely the wrong time, when the expected future stock return is declining, the average of past stock returns will actually increase. This may well have happened during the long bull market of the 1980s and 1990s.

An alternative approach is to forecast future returns using valuation ratios—ratios of stock prices to accounting measures of value, such as dividends or earnings. One variant of this approach, known as the Gordon growth model, breaks returns into income (the dividend/price ratio) and capital gains (the long-term average growth rate of dividends). Return is estimated by the dividend/price ratio plus the dividend growth rate. Another variant argues that stock returns come from corporate earnings: Earnings that are paid out generate income, while earnings that are reinvested generate growth. In the long run, both components of earnings are equally valuable and thus return should equal the earnings/price ratio.

Over long periods of time, these formulas have given results that are consistent with average realized returns. For instance, from 1871–2001, the average dividend/price ratio was just under 5 percent, while the average real growth rate was just over 2 percent, adding to about 7 percent, which is the long-term compound average realized stock return in real terms, that is, correcting for inflation. The average earnings/price ratio was also close to 7 percent.

But current valuation ratios are wildly different from historical averages, reflecting the unprecedented 20-year bull market that ended about two years ago. The dividend/price ratio, for example, has fallen dramatically to about 1.5 percent. In part, this may be due to a shift in corporate financial policy away from paying dividends and toward repurchasing shares. One way to correct for this is to add repurchases to conventional dividends, but this still implies a dividend/price ratio of only about 2.5 percent. The earnings/price ratio has also declined. In the short term, this ratio may be affected by temporary cyclical fluctuations in earnings. But even correcting for this, the earnings/price ratio is about half its long-term historical average.

The implications of current valuations for future returns depend on

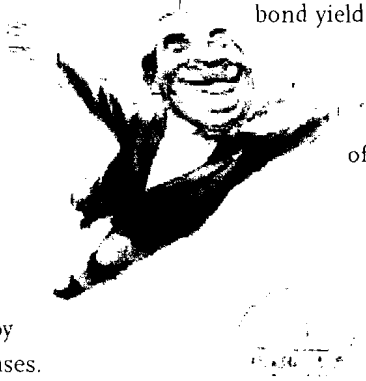
continued on page 12

*Ibbotson's and Campbell's columns refer to returns on the S&P 500® Index, in nominal terms and real (inflation-adjusted) terms respectively.

I D E A
exchange

Building the Future From the Past continued from page 10

Second, investors are rationally willing to pay high prices for current earnings when they think future earnings will grow. The evidence demonstrates that over time investors who buy when the market's P/E ratios are high do just about as well as those who buy when the market's P/E ratios are low.



Stocks are predicted to outperform bonds in the future, but not by further P/E ratio increases. Instead, stocks will tend to participate with the overall U.S. economy and earnings per share growth. My forecast for stocks is somewhat less than 4 percent in excess of long-term bond yields. Applying this premium to recent bond yields gives a long-term forecast of over 9 percent for the stock market. It is high, but lower than the historical stock market return. But, of course, there is no free lunch. The reason stocks are expected to outperform bonds is that they are riskier than bonds. Although stocks belong in most people's portfolios, the smart investor will still want to diversify across different types of stocks, as well as across bonds and other asset classes.

To learn more about Ibbotson's research, go to **http://mba.yale.edu/faculty/professors/ibbotson.htm**.

Stock Returns for a New Century continued from page 11

whether the market has reached a new steady state, in which current valuations will persist, or whether these valuations are the result of some transitory phenomenon.

If current valuations represent a new steady state, they imply a substantial decline in the equity returns that can be expected in the future. The future expected stock return might be 3.5 percent to 4.5 percent, rather than the historical average of 7 percent. This would allow for only a very modest equity premium relative to Treasury bills or inflation-indexed Treasury bonds, which currently offer a safe 3.5 percent real yield.

If current valuations are transitory, it matters critically what happens to restore traditional valuation ratios. Rapid earnings and dividend growth could restore traditional valuations without any decline in stock prices. While this is always a possibility, it would be historically unprecedented. The U.S. stock market has an extremely poor record of predicting long-term earnings and dividend growth. Historically, stock prices have increased relative to earnings during decades of rapid earnings growth, such as the 1920s, 1960s, and 1990s, as if the stock market anticipates that rapid earnings growth will continue in the next decade. But there is no systematic tendency for a profitable decade to be followed by a second profitable decade. The 1920s, for example, were followed by the 1930s, and the 1960s by the 1970s. Thus, stock market optimism often fails to be justified by subsequent earnings growth.

A second possibility is that stock prices will decline or stagnate until traditional valuations are restored. This has occurred at various times in the past after periods of unusually high stock prices, notably in the 1900s, 1910s, 1930s, and 1970s. This would imply extremely low and perhaps even negative returns during the adjustment period and then higher returns afterward.

It is too soon to tell which of these views is correct, and I believe it is sensible to put some weight on each. That is, I expect valuation ratios to return part way but not fully to traditional levels, with the adjustment coming primarily from stock prices rather than earnings growth. A rough guess for the long-term stock return, after the adjustment process is complete, might be a compound average real equity return of 5.0 percent to 5.5 percent, corresponding to an equity premium of 1.5 percent to 2.0 percent.

To learn more about Campbell's research, go to **http://post.economics.harvard.edu/faculty/campbell/campbell.html**.

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Equity Risk Premiums: Looking backwards and forwards…

Aswath Damodaran

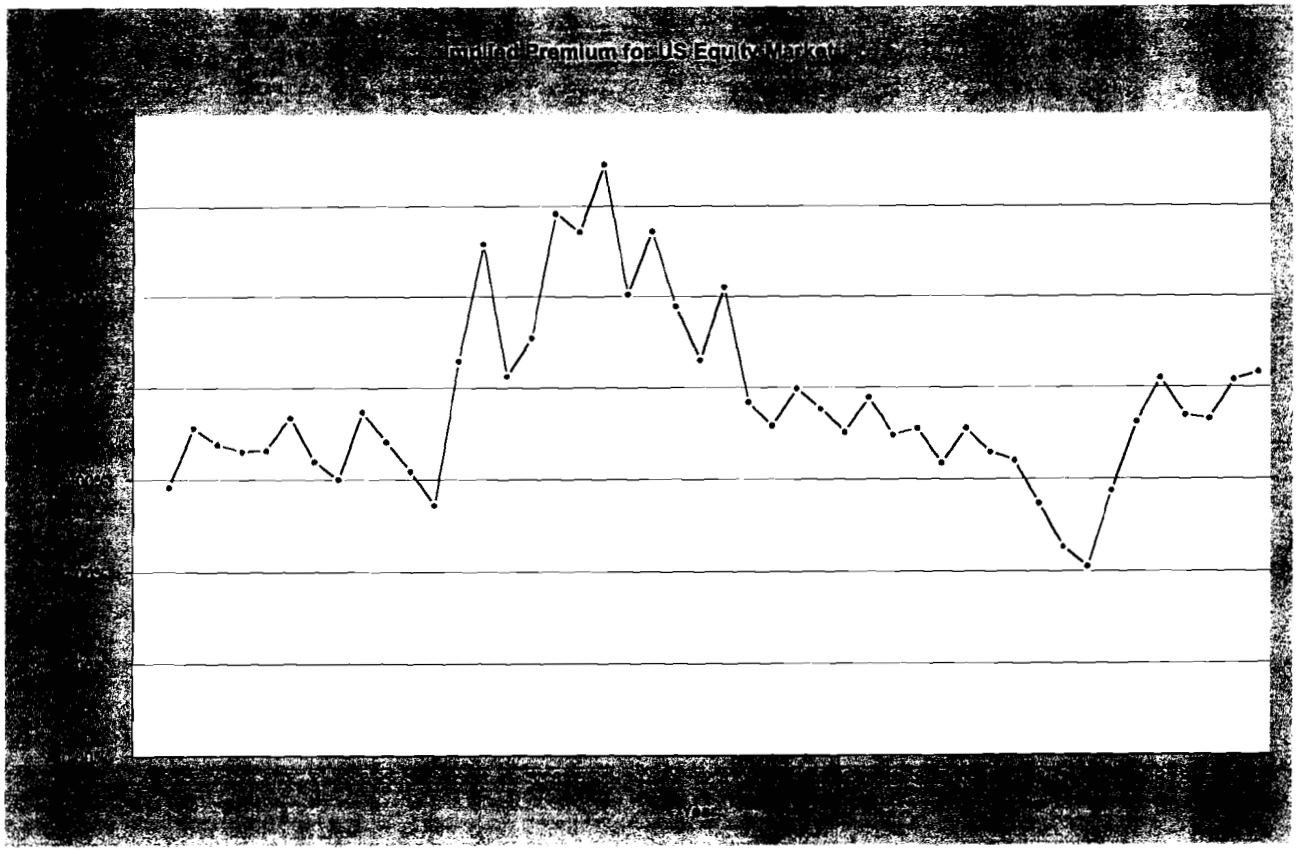
Implied Equity Premiums

- We can use the information in stock prices to back out how risk averse the market is and how much of a risk premium it is demanding.

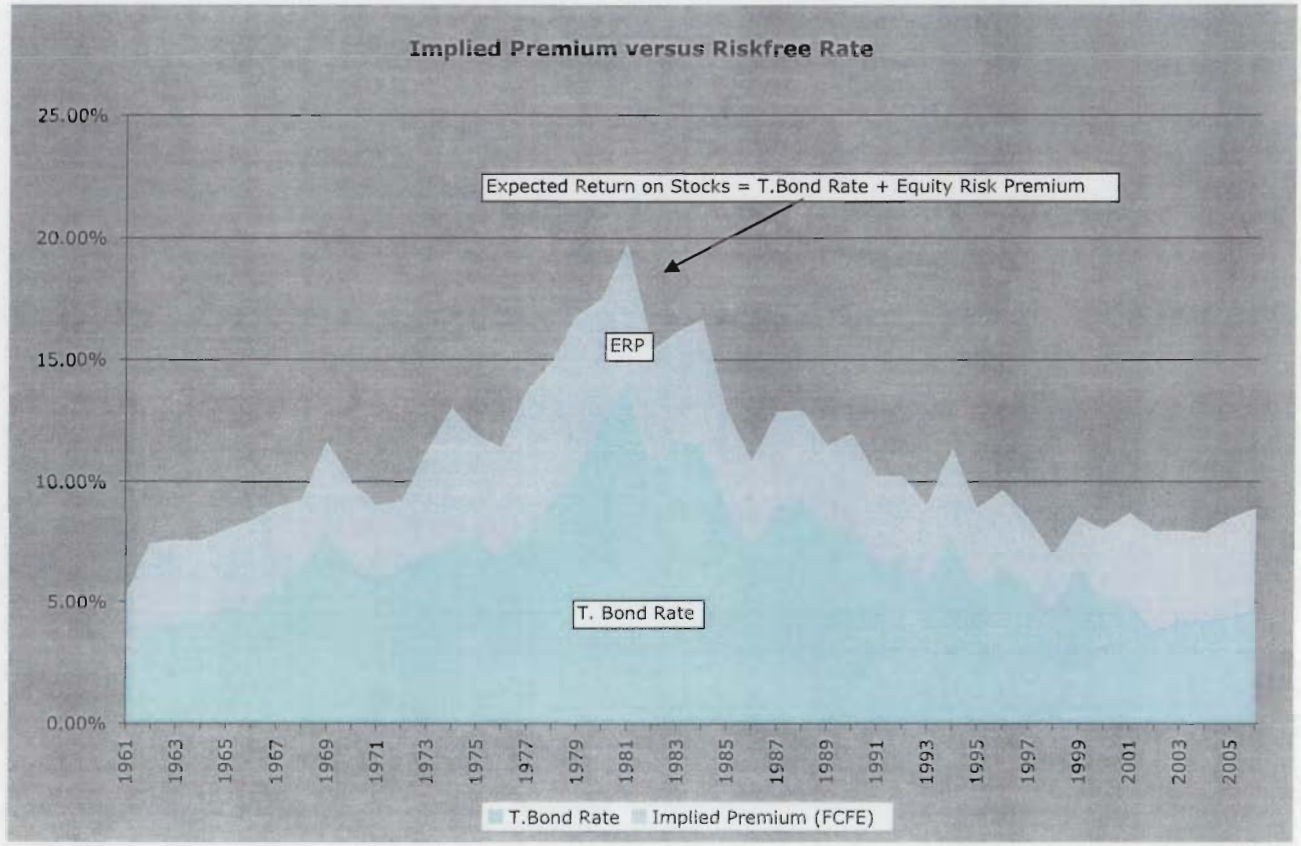
- If you pay the current level of the index, you can expect to make a return of 8.86% on stocks (which is obtained by solving for r in the following equation)

- Implied Equity risk premium = Expected return on stocks - Treasury bond rate = 8.86% - 4.7% = 4.16%

Implied Premiums in the US



Implied Premium versus RiskFree Rate



Value Line's estimates of sales and earnings growth for individual companies are derived by correlating sales, earnings, and dividends to appropriate components or subcomponents of the Gross Domestic Product, presented below. A more detailed forecast appears periodically in Selection & Opinion.

HYPOTHESIZED ECONOMIC ENVIRONMENT 3 TO 5 YEARS HENCE

The hypothesized 2010-2012 economic environment into which earnings are forecast is as follows: Unemployment will average 4.6% of the national labor force, compared to 4.6% in 2006. There will be no major war in progress at that time. Industrial production will be expanding about 2.7% per year. Inflation will continue to be modest. Prices as measured by the broad-based GDP deflator will advance about 2.3% per year on the average. The corporate income tax rate will be around 35%. Long-term interest rates on high-grade corporate bonds are projected to be about 6.5% in the years 2010-2012. We expect the Federal Reserve to pursue fairly accommodative policies except in years in which the economy is overheating. Based on these assumptions, the Gross Domestic Product will average $17,080 billion in the years 2010-2012, a level that is about 29% above the estimated 2006 total of $13,254.

Things may turn out differently. But in the absence of knowledge of the future, we use the above assumptions, which appear to be most plausible. Thus we are able to apply a common economic environment to all stocks for the purpose of measuring relative growth potential.

THESE ARE THE NATIONAL INCOME SERIES TO WHICH VALUE LINE SALES, EARNINGS, AND DIVIDEND ESTIMATES ARE CORRELATED

ANNUAL STATISTICS	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*	2007*	2008*	2010-12*
Gross Domestic Product ($Bill.)	7817	8304	8747	9268	9817	10128	10470	10961	11712	12456	*13254*	*13916*	*14613*	*17080*
Real GDP (2000 Chained $Bill.)	8329	8704	9067	9470	9817	9991	10049	10301	10704	11049	*11422*	*11741*	*12093*	*13305*
Total Consumption ($Bill.)	5619	5832	6126	6439	6739	6910	7099	7295	7577	7841	*8092*	*8354*	*8605*	*9458*
Nonresidential Fixed Investment ($Bill.)	834	934	1038	1133	1232	1180	1072	1082	1146	1224	*1315*	*1387*	*1447*	*1640*
Industrial Prod. (% Change, Annualized)	4.3	7.4	5.9	4.4	4.4	-3.4	-0.3	0.6	4.1	3.2	*4.1*	*1.8*	*2.2*	*2.7*
Housing Starts (Mill. Units)	1.47	1.47	1.62	1.65	1.57	1.60	1.71	1.85	1.95	2.07	*1.82*	*1.56*	*1.60*	*1.85*
Total Light Vehicle Sales (Mill. Units)	15.1	15.1	15.5	16.9	17.4	17.1	16.8	16.6	16.9	16.9	*16.5*	*16.4*	*16.7*	*17.3*
Personal Savings Rate (%)	4.0	3.6	4.3	2.4	2.4	1.8	2.4	2.1	2.0	-0.4	*-1.0*	*-0.6*	*-0.2*	*1.0*
National Unemployment Rate (%)	5.4	4.9	4.5	4.2	4.0	4.8	5.8	6.0	5.5	5.1	*4.6*	*4.6*	*4.7*	*4.6*
AAA Corp Bond Rate (%)	7.4	7.3	6.5	7.0	7.6	7.1	6.5	5.7	5.6	5.2	*5.6*	*5.5*	*5.8*	*6.5*
10-Year Treasury Note Rate (%)	6.4	6.4	5.3	5.6	6.0	5.0	4.6	4.0	4.3	4.3	*4.8*	*4.8*	*5.1*	*5.6*
3-Month Treasury Bill Rate (%)	5.0	5.1	4.8	4.6	5.8	3.4	1.6	1.0	1.4	3.1	*4.7*	*5.0*	*4.9*	*5.1*
ANNUAL RATES OF CHANGE														
Real GDP	3.7	4.5	4.2	4.4	3.7	0.8	1.6	2.5	3.9	3.2	*3.4*	*2.8*	*3.0*	*3.3*
GDP Deflator	1.9	1.7	1.1	1.4	2.2	2.4	1.7	2.1	2.8	3.0	*2.9*	*2.2*	*2.1*	*2.3*
Consumer Price Index	2.9	2.3	1.5	2.2	3.4	2.8	1.6	2.3	2.7	3.4	*3.2*	*2.3*	*2.3*	*2.5*

QUARTERLY ANNUALIZED RATES	2006				2007				2008			
	1st	2nd	3rd	4th*	1st*	2nd*	3rd*	4th*	1st*	2nd*	3rd*	4th*
Gross Domestic Product ($Bill.)	13008	13197	13323	*13487*	*13671*	*13834*	*13998*	*14161*	*14343*	*14517*	*14700*	*14900*
Real GDP (2000 Chained $Bill.)	11316	11388	11444	*11542*	*11619*	*11697*	*11781*	*11868*	*11956*	*12045*	*12120*	*12230*
Total Consumption ($Bill.)	8004	8055	8111	*8199*	*8266*	*8325*	*8383*	*8443*	*8506*	*8569*	*8610*	*8735*
Nonresidential Fixed Investment ($Bill.)	1289	1303	1334	*1333*	*1356*	*1382*	*1399*	*1413*	*1427*	*1443*	*1450*	*1465*
Industrial Production (% Change, Annualized)	5.1	6.5	4.0	*-0.5*	*0.5*	*2.3*	*2.0*	*2.0*	*2.1*	*2.3*	*2.2*	*2.3*
Housing Starts (Mill. Units)	2.12	1.87	1.71	*1.56*	*1.58*	*1.55*	*1.55*	*1.57*	*1.58*	*1.58*	*1.59*	*1.60*
Total Light Vehicle Sales (Mill. Units)	16.9	16.3	16.6	*16.3*	*16.4*	*16.4*	*16.5*	*16.5*	*16.6*	*16.6*	*16.7*	*16.8*

*Estimated

33

Duke University/CFO Business Outlook Survey - U.S. - Winter, 2007

10. On February 19, 2007 the annual yield on 10-yr treasury bonds was 4.7%. Please complete the following:

	Mean	SD	95% CI	Median	Minimum	Maximum	Total
Over the next 10 years, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be less than:	3.12	4.66	2.67 - 3.58	4	-25	50	404
Over the next 10 years, I expect the average annual S&P 500 return will be: Expected return:	8.12	4.88	7.65 - 8.59	8	2	75	418
Over the next 10 years, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be greater than:	11.89	7.67	11.14 - 12.64	11	0	100	402
Over the next year, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be less than:	0.81	6.70	0.16 - 1.46	2	-30	40	404
Over the next year, I expect the average annual S&P 500 return will be: Expected return:	7.13	3.91	6.76 - 7.51	7	-10	40	420
Over the next year, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be greater than:	11.45	5.28	10.93 - 11.97	10	-2	35	402

THE VALUE LINE Investment Survey®

Part 1
Summary & Index

File at the front of the *Ratings & Reports* binder. Last week's *Summary & Index* should be removed.

February 23, 2007

TABLE OF SUMMARY & INDEX CONTENTS

SCREENS

The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

19.2

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
17.7	14.1	19.6

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend paying stocks under review

1.6%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
1.7%	2.4%	1.6%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the hypothesized economic environment 3 to 5 years hence

30%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
50%	115%	40%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXII, No. 26.
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THE VALUE LINE Investment Survey®

Part 1
Summary & Index

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March 2, 2007

TABLE OF SUMMARY & INDEX CONTENTS

SCREENS

The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

19.0

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
16.8	14.1	19.6

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend paying stocks under review

1.6%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
1.8%	2.4%	1.6%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the hypothesized economic environment 3 to 5 years hence

35%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
50%	115%	40%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

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Part 1
Summary & Index

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March 9, 2007

TABLE OF SUMMARY & INDEX CONTENTS

SCREENS

The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

18.4

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
17.1	14.1	19.6

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend paying stocks under review

1.7%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
1.8%	2.4%	1.6%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the hypothesized economic environment 3 to 5 years hence

40%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
50%	115%	40%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

*Reviewed in this week's issue.

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Part 1
Summary & Index

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March 16, 2007

TABLE OF SUMMARY & INDEX CONTENTS

SCREENS

The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

18.1

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
17.0	14.1	19.6

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend paying stocks under review

1.7%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
1.8%	2.4%	1.6%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the hypothesized economic environment 3 to 5 years hence

45%

26 Weeks Ago	Market Low 10-9-02	Market High 5-5-06
50%	115%	40%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

*Reviewed in this week's issue.

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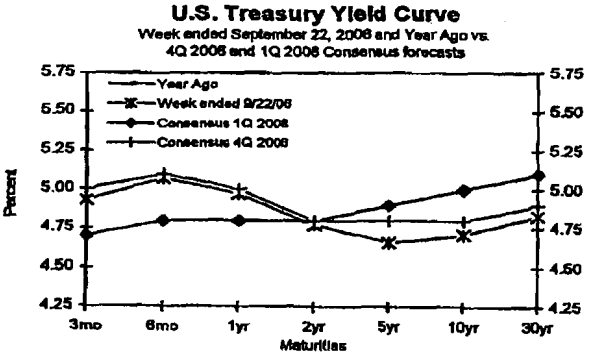
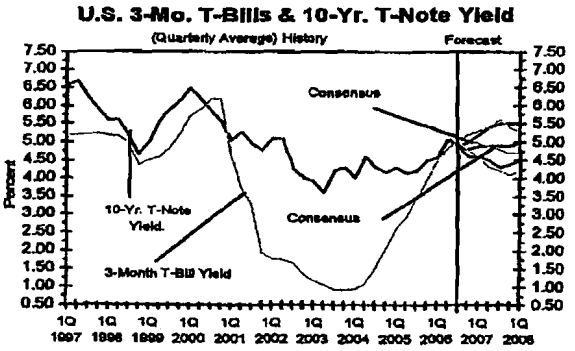
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

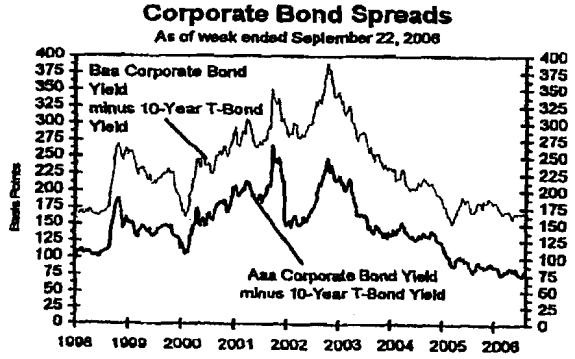
	History							Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			Latest Q*	4Q	1Q	2Q	3Q	4Q	1Q
Interest Rates	Sep. 22	Sep. 15	Sep. 8	Sep. 1	Aug.	Jul.	Jun.	3Q 2006	2006	2007	2007	2007	2007	2008
Federal Funds Rate	5.24	5.23	5.25	5.25	5.25	5.24	4.99	*5.24*	5.3	5.2	5.1	5.0	4.9	4.9
Prime Rate	8.25	8.25	8.25	8.25	8.25	8.25	8.02	*8.25*	8.3	8.2	8.1	8.0	7.9	7.9
LIBOR, 3-mo.	5.37	5.39	5.39	5.40	5.42	5.49	5.40	*5.43*	5.4	5.3	5.2	5.1	5.0	5.0
Commercial Paper, 1-mo.	5.20	5.20	5.21	5.20	5.22	5.24	5.12	*5.22*	5.3	5.3	5.2	5.0	5.0	4.9
Treasury bill, 3-mo.	4.93	4.93	4.97	5.06	5.09	5.08	4.92	*5.04*	5.0	5.0	4.9	4.8	4.7	4.7
Treasury bill, 6-mo.	5.07	5.11	5.12	5.14	5.17	5.27	5.17	*5.18*	5.1	5.1	5.0	4.9	4.8	4.8
Treasury bill, 1 yr.	4.97	5.02	5.02	5.03	5.08	5.22	5.16	*5.10*	5.0	5.0	4.9	4.9	4.8	4.8
Treasury note, 2 yr.	4.77	4.83	4.81	4.83	4.90	5.12	5.12	*4.94*	4.8	4.9	4.9	4.8	4.8	4.8
Treasury note, 5 yr.	4.66	4.73	4.73	4.73	4.82	5.04	5.07	*4.86*	4.8	4.8	4.9	4.8	4.8	4.9
Treasury note, 10 yr.	4.71	4.79	4.79	4.76	4.88	5.09	5.11	*4.91*	4.8	4.9	4.9	4.9	4.9	5.0
Treasury note, 30 yr.	4.83	4.92	4.94	4.91	5.00	5.13	5.15	*5.01*	4.9	5.0	5.0	5.0	5.1	5.1
Corporate Aaa bond	5.49	5.58	5.59	5.57	5.68	5.85	5.89	*5.69*	5.7	5.8	5.9	5.9	5.9	6.0
Corporate Baa bond	6.40	6.49	6.52	6.50	6.59	6.76	6.78	*6.61*	6.6	6.7	6.8	6.8	6.8	6.9
State & Local bonds	4.21	4.30	4.34	4.30	4.39	4.61	4.60	*4.43*	4.4	4.5	4.6	4.6	4.7	4.7
Home mortgage rate	6.40	6.43	6.47	6.44	6.52	6.76	6.68	*6.57*	6.4	6.5	6.5	6.5	6.6	6.6

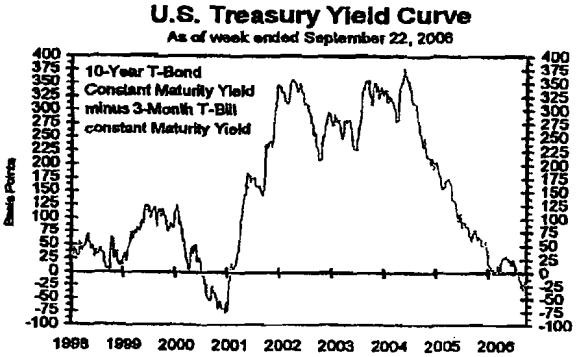
	History								Consensus Forecasts-Quarterly Avg.					
	3Q	4Q	1Q	2Q	3Q	4Q	1Q	3Q*	4Q	1Q	2Q	3Q	4Q	1Q
Key Assumptions	2004	2004	2005	2005	2005	2005	2006	2006	2006	2007	2007	2007	2007	2008
Major Currency Index	81.9	81.3	83.5	84.7	85.8	84.9	82.2	*81.7*	81.0	80.2	79.6	79.6	79.6	79.5
Real GDP	2.6	3.4	3.3	4.2	1.8	5.6	2.6	*2.3*	2.5	2.6	2.6	2.9	3.0	3.1
GDP Price Index	3.2	3.5	2.4	3.3	3.3	3.3	3.3	*2.7*	2.3	2.6	2.4	2.3	2.2	2.3
Consumer Price Index	3.6	2.3	3.8	5.5	3.3	2.2	4.9	*3.3*	1.9	2.7	2.5	2.4	2.3	2.3

[1]Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Definitions reported here are same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for the U.S. Federal Reserve Board's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS). **Interest rate data for 3Q 2006 based on historical data through the week ended September 22. Data for 3Q 2006 Major Currency Index also is based on data through week ended September 22. Figures for 3Q 2006 Real GDP, GDP Chained Price Index and Consumer Price Index are consensus forecasts based on a special question asked of the panel members this month.*









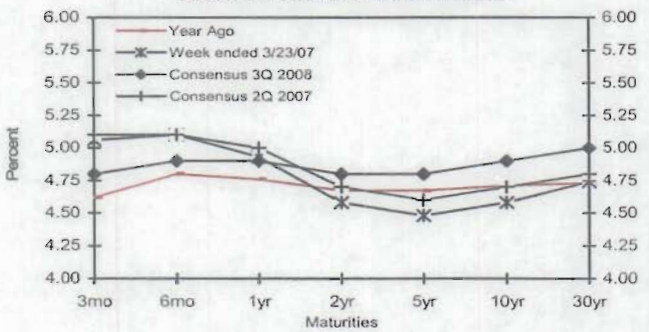
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			*Latest Q**	2Q	3Q	4Q	1Q	2Q	3Q
Interest Rates	Mar.23	Mar.16	Mar.9	Mar.2	Feb.	Jan.	Dec.	*1Q 2007*	2007	2007	2007	2008	2008	2008
Federal Funds Rate	5.26	5.25	5.25	5.28	5.26	5.25	5.24	*5.26*	5.2	5.1	5.0	5.0	4.9	4.9
Prime Rate	8.25	8.25	8.25	8.25	8.25	8.25	8.25	*8.25*	8.2	8.1	8.1	8.0	8.0	7.9
LIBOR, 3-mo.	5.35	5.35	5.34	5.35	5.36	5.36	5.36	*5.36*	5.3	5.2	5.2	5.1	5.1	5.1
Commercial Paper, 1-mo.	5.23	5.22	5.23	5.21	5.22	5.22	5.23	*5.22*	5.3	5.2	5.1	5.1	5.0	5.0
Treasury bill, 3-mo.	5.06	5.07	5.11	5.15	5.16	5.11	4.97	*5.12*	5.1	5.0	4.9	4.9	4.8	4.8
Treasury bill, 6-mo.	5.10	5.12	5.10	5.12	5.16	5.15	5.07	*5.14*	5.1	5.0	5.0	4.9	4.9	4.9
Treasury bill, 1 yr.	4.93	4.93	4.92	4.96	5.05	5.06	4.94	*5.02*	5.0	4.9	4.9	4.9	4.9	4.9
Treasury note, 2 yr.	4.58	4.57	4.57	4.64	4.85	4.88	4.67	*4.77*	4.7	4.7	4.8	4.8	4.8	4.8
Treasury note, 5 yr.	4.48	4.46	4.48	4.51	4.71	4.75	4.53	*4.65*	4.6	4.7	4.7	4.8	4.8	4.8
Treasury note, 10 yr.	4.58	4.54	4.53	4.55	4.72	4.76	4.56	*4.68*	4.7	4.7	4.8	4.8	4.8	4.9
Treasury note, 30 yr.	4.74	4.69	4.66	4.67	4.82	4.85	4.68	*4.79*	4.8	4.9	4.9	5.0	5.0	5.0
Corporate Aaa bond	5.32	5.27	5.25	5.25	5.39	5.40	5.32	*5.35*	5.5	5.6	5.6	5.7	5.7	5.8
Corporate Baa bond	6.31	6.23	6.19	6.15	6.28	4.23	6.22	*5.58*	6.4	6.5	6.6	6.6	6.7	6.7
State & Local bonds	4.20	4.13	4.08	4.10	4.22	4.23	4.11	*4.19*	4.3	4.3	4.4	4.4	4.5	4.5
Home mortgage rate	6.16	6.14	6.14	6.18	6.29	6.22	6.14	*6.22*	6.2	6.3	6.4	6.4	6.4	6.5
	History								Consensus Forecasts-Quarterly Avg.					
	2Q	3Q	4Q	1Q	2Q	3Q	4Q	*1Q**	2Q	3Q	4Q	1Q	2Q	3Q
Key Assumptions	2005	2005	2005	2006	2006	2006	2006	*2007*	2007	2007	2007	2008	2008	2008
Major Currency Index	83.5	84.7	85.8	84.9	82.2	81.7	81.6	*81.9*	80.9	80.6	80.2	80.0	79.7	79.6
Real GDP	3.3	4.2	1.8	5.6	2.6	2.0	2.5	*2.2*	2.4	2.8	3.0	3.1	3.0	3.0
GDP Price Index	2.4	3.3	3.3	3.3	3.3	1.9	1.7	*2.6*	2.3	2.1	2.1	2.2	2.1	2.1
Consumer Price Index	4.0	5.5	3.5	1,8	5.1	3.0	-2.0	*3.2*	2.6	2.4	2.2	2.3	2.3	2.3

[1]Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Definitions reported here are same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for the U.S. Federal Reserve Board's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS). ***Interest rate data for 1Q 2007 based on historical data through the week ended March 23rd. Data for 1Q 2007 Major Currency Index also is based on data through week ended March 23rd. Figures for 1Q 2007 Real GDP, GDP Chained Price Index and Consumer Price Index are consensus forecasts based on a special question asked of the panel members this month.***

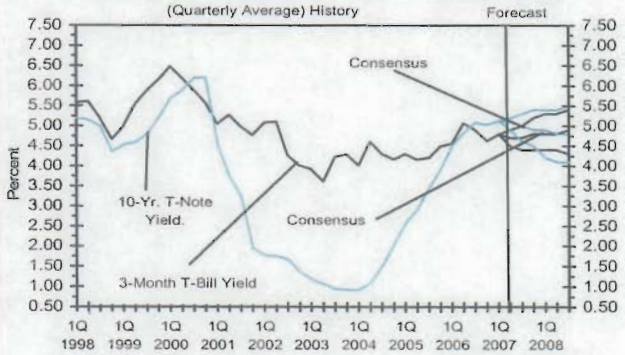
U.S. Treasury Yield Curve

Week ended March 23, 2007 and Year Ago vs.
2Q 2007 and 3Q 2008 Consensus forecasts



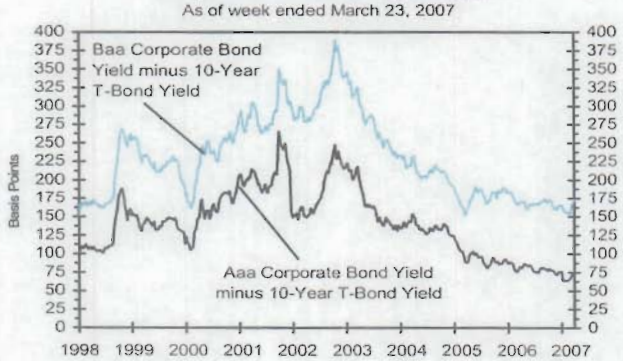
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield

(Quarterly Average) History — Forecast



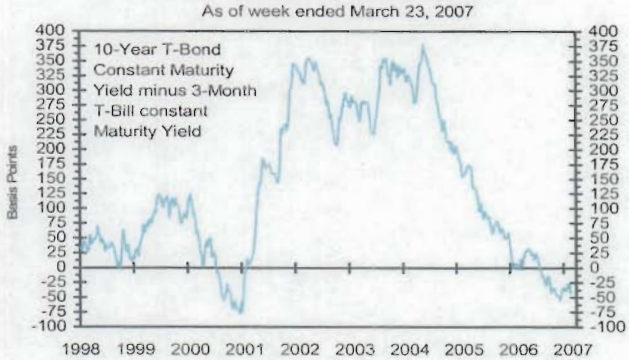
Corporate Bond Spreads

As of week ended March 23, 2007



U.S. Treasury Yield Curve

As of week ended March 23, 2007



SUMMARY OF COST OF EQUITY STUDIES

DCF Studies

Pauline Ahern's AUS Proxy Group

DCF Study using 3 month: Dividend yield: (schedule 2)	8.09%
DCF Study using 6 month: Dividend yield: (schedule 2)	8.13%

Pauline Ahern's Value Line Proxy Group

DCF Study using 3 month: Dividend yield: (schedule 2)	8.30%
DCF Study using 6 month: Dividend yield: (schedule 2)	8.37%
Range of DCF Studies:	8.09% - 8.37%

CAPM Studies

Historical Risk Premiums

Pauline Ahern's AUS Proxy Group

CAPM Study using Long term interest rates: (Schedule 3, pages 1 and 2)	8.76% - 8.95%
CAPM Study using Intermediate term interest rates (Schedule 3, pages 1 and 2)	8.78% - 9.00%

Pauline Ahern's Value Line Proxy Group

CAPM Study using Long term interest rates: (Schedule 3, pages 1 and 2)	8.98% - 9.17%
CAPM Study using Intermediate term interest rates (Schedule 3, pages 1 and 2)	9.01% - 9.22%

SUMMARY OF COST OF EQUITY STUDIES

CAPM Studies (cont)

Forecasted Risk Premiums

Pauline Ahern's AUS Proxy Group

CAPM Study using Long term interest rates: (Schedule 3, pages 1 and 2)	7.70% - 7.89%
CAPM Study using Intermediate term interest rates (Schedule 3, pages 1 and 2)	7.54% - 7.75%

Pauline Ahern's Value Line Proxy Group

CAPM Study using Long term interest rates: (Schedule 3, pages 1 and 2)	7.86% - 8.05%
CAPM Study using Intermediate term interest rates (Schedule 3, pages 1 and 2)	7.70% - 7.92%
Range of CAPM Studies:	7.54% - 9.22%
Range of all Studies:	7.54% - 9.22%
Company Specific Risk Adjustment	40 Basis points
Adjusted Range	7.94% - 9.62%
Recommended Cost of Equity for Petitioner:	**9.15%**

DCF MODEL
VALUE LLINE PROXY
SUMMARY OF GROWTH RATES (g)

	10 YEAR EARNINGS PER SHARE	5 YEAR EARNINGS PER SHARE	FORECASTED EARNINGS PER SHARE	10 YEAR DIVIDENDS PER SHARE	5 YEAR DIVIDENDS PER SHARE	FORECASTED DIVIDENDS PER SHARE	10 YEAR BOOK VALUE PER SHARE	5 YEAR BOOK VALUE PER SHARE	FORECASTED BOOK VALUE PER SHARE	AVERAGE
AMERICAN STATES WATER			10.50%	1.00%	1.00%	1.50%	4.00%	4.50%	5.00%	3.93%
AQUA AMERICA	9.00%	8.50%	8.00%	6.00%	6.50%	10.50%	9.50%	11.00%	10.00%	8.78%
CALIFORNIA WATER			4.50%	1.50%	1.00%	1.00%	2.50%	1.50%	5.00%	2.43%
SOUTHWEST WATER	13.50%	1.50%	11.00%	6.00%	10.00%	9.00%	9.50%	14.00%	6.00%	8.94%
AVERAGE	11.25%	5.00%	8.50%	3.63%	4.63%	5.50%	6.38%	7.75%	6.50%	6.02%

Value Line January 26, 2007

	ZACKS* FORECASTED EARNINGS PER SHARE	REUTERS** FORECASTED EARNINGS PER SHARE	C.A. TURNER*** FORECASTED DIVIDENDS PER SHARE	AVERAGE
AMERICAN STATES WATER	6.00%		0.50%	3.25%
AQUA AMERICA	7.70%	10.71%	0.50%	6.30%
CALIFORNIA WATER	9.70%	9.67%	1.00%	6.79%
SOUTHWEST WATER	10.00%	9.00%	1.00%	6.67%
AVERAGE	8.35%	9.79%	0.75%	5.75%

*Zack's 1/29/07
**Reuters.com 1/30/07
***AUS Dividend Monitor and Outlook, December, 2006

DIVIDEND YIELDS

	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	3 MONTH AVERAGE	6 MONTH AVERAGE
AMERICAN STATES WATER	2.70%	2.40%	2.40%	2.20%	2.40%	2.50%	2.37%	2.43%
AQUA AMERICA	2.00%	2.00%	2.10%	1.90%	1.90%	2.00%	1.93%	1.98%
CALIFORNIA WATER	3.40%	3.10%	3.00%	3.10%	2.80%	2.90%	2.93%	3.05%
SOUTHWEST WATER	1.90%	1.60%	1.60%	1.60%	1.50%	1.80%	1.63%	1.67%
AVERAGE	2.50%	2.28%	2.28%	2.20%	2.15%	2.30%	2.22%	2.28%

COST OF EQUITY = DIVIDEND YIELD * (1+.5 * GROWTH RATE) + GROWTH RATE

USING A THREE MONTH AVERAGE YIELD AND A
6.02% Growth Rate 8.30%

USING A SIX MONTH AVERAGE YIELD AND A
6.02% Growth Rate 8.37%

DCF MODEL
AUS PROXY GROUP

SUMMARY OF GROWTH RATES

Forecasted Growth Rates Extended Proxy	ZACKS* FORECASTED EARNINGS PER SHARE	REUTERS** FORECASTED EARNINGS PER SHARE	C.A. TURNER** FORECASTED DIVIDENDS PER SHARE	AVERAGE
AMERICAN STATES WATER	6.00%	na	0.50%	3.25%
AQUA AMERICA	7.70%	10.71%	0.50%	6.30%
ARTESIAN RESOURCES	7.00%	6.75%	1.00%	4.92%
CALIFORNIA WATER	9.70%	9.67%	1.00%	6.79%
MIDDLESEX WATER COMPANY		3.75%		3.75%
YORK WATER COMPANY	8.00%	5.75%	6.00%	6.58%
AVERAGE	7.68%	7.33%	1.80%	5.27%

*Zack's 1/29/07
**Reuters.com 1/30/07
***AUS Dividend Monitor and Outlook, December, 2006

DIVIDEND YIELDS

	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	3 MONTH AVERAGE	6 MONTH AVERAGE
AMERICAN STATES WATER	2.70%	2.40%	2.40%	2.20%	2.40%	2.50%	2.37%	2.43%
AQUA AMERICA	2.00%	2.00%	2.10%	1.90%	1.90%	2.00%	1.93%	1.98%
ARTESIAN RESOURCES	3.20%	3.10%	3.20%	3.30%	3.20%	3.30%	3.27%	3.22%
CALIFORNIA WATER	3.40%	3.10%	3.00%	3.10%	2.80%	2.90%	2.93%	3.05%
MIDDLESEX WATER COMPANY	4.00%	3.40%	3.60%	3.60%	3.40%	3.70%	3.57%	3.62%
YORK WATER COMPANY	2.70%	2.50%	2.30%	2.30%	2.40%	2.60%	2.43%	2.47%
AVERAGE	3.00%	2.75%	2.77%	2.73%	2.68%	2.83%	2.75%	2.79%

COST OF EQUITY = DIVIDEND YIELD * (1+.5 * GROWTH RATE) + GROWTH RATE

USING A THREE MONTH AVERAGE YIELD AND A
5.27% Growth Rate 8.09%

USING A SIX MONTH AVERAGE YIELD AND A
5.27% Growth Rate 8.13%

YIELDS ON U.S. TREASURY SECURITIES

	1 Year T-NOTE	5 Year T-NOTE	10 Year T-NOTE	30 Year T-BOND
5-Jan-06	4.35%	4.28%	4.35%	4.55%
2-Feb-06	4.60%	4.50%	4.56%	4.70%
2-Mar-06	4.74%	4.66%	4.63%	4.61%
6-Apr-06	4.82%	4.84%	4.90%	4.97%
4-May-06	4.98%	5.03%	5.15%	5.24%
1-Jun-06	5.07%	5.02%	5.10%	5.19%
6-Jul-06	5.29%	5.14%	5.18%	5.22%
3-Aug-06	5.11%	4.90%	4.96%	5.04%
7-Sep-06	5.02%	4.73%	4.79%	4.93%
5-Oct-06	4.87%	4.54%	4.60%	4.76%
1-Nov-06	4.99%	4.52%	4.56%	4.68%
6-Dec-06	4.86%	4.45%	4.49%	4.60%
3-Month Average	4.91%	4.50%	4.55%	4.68%
6-Month Average	5.02%	4.71%	4.76%	4.87%
Spot yields - March 2, 2007		4.43%	4.50%	4.64%
Spot yields - April 20, 2007		4.57%	4.67%	4.84%

Interest rates obtained from Value Line Selections and Opinions
Spot yields taken from CNN.com

RISK PREMIUM

Historical Risk Prremiums

Total Returns 1926 - 2006

	Stocks	Long Bonds	Int Bonds	Short Bonds
Geometric Mean	10.40%	5.40%	5.30%	3.70%
Arithmetic Mean	12.30%	5.80%	5.40%	3.80%

Market Risk Premiums

Geometric Mean	5.00%	5.10%	6.70%
Arithmetic Mean	6.50%	6.90%	8.50%
Average Premium	5.75%	6.00%	7.60%

Total return data obtained from Ib
SBBI 2007 Yearbook Classic Edition.

Water Industry Betas

		Value Line Beta*	Smart Money Beta**	Reuters Beta***	NASDAQ Beta****	Average Value Line 50% Other Sources 50%
AMERICAN STATES WATER	(VL & AUS)	0.80	0.55	0.51	0.51	0.662
AQUA AMERICA	(VL & AUS)	0.90	0.48	0.46	0.47	0.686
ARTESIAN RESOURCES	(AUS)	na	0.55	0.53	0.56	na
CALIFORNIA WATER	(VL & AUS)	0.90	0.82	0.76	0.79	0.844
MIDDLESEX WATER COMPANY	(AUS)	0.85	0.62	0.60	0.61	0.731
SOUTHWEST WATER	(VL)	0.90	0.69	0.71	0.70	0.798
YORK WATER COMPANY	(AUS)	0.55	0.69	0.72		0.626
Average Value Line Proxy		0.875	0.635	0.610	0.616	0.748
Average AUS Proxy		0.800	0.618	0.598	0.587	0.710

*Janaury 26,2007
**Janaury 30, 2007
***January 30, 2007
****February 6. 2007

All betas are adjusted: Adjusted beta = Raw beta*.67 +.35

CAPM Calculations
Historical Risk Premiums

AUS Proxy Group

Risk premiuns		Long	Int	Short
Premiums		5.75%	6.00%	7.60%
Rates	**3 month**	4.68%	4.53%	4.91%
Beta	0.710	**8.76%**	**8.78%**	10.30%

Risk premiuns		Long	Int	Short
Premiums		5.75%	6.00%	7.60%
Rates	**6 month**	4.87%	4.74%	5.02%
Beta	0.710	**8.95%**	**9.00%**	10.42%

Value Line Proxy Group

Risk premiuns		Long	Int	Short
Premiums		5.75%	6.00%	7.60%
Rates	**3 month**	4.68%	4.53%	4.91%
Beta	0.748	**8.98%**	**9.01%**	10.59%

Risk premiuns		Long	Int	Short
Premiums		5.75%	6.00%	7.60%
Rates	**6 month**	4.87%	4.74%	5.02%
Beta	0.748	**9.17%**	**9.22%**	10.71%

CAPM Calculations

Forecasted Risk Premiums

AUS Proxy Group

Risk premiuns		Long	Int	Short
Premiums		4.25%	4.25%	4.25%
Rates	**3 month**	4.68%	4.53%	4.91%
Beta	0.710	**7.70%**	**7.54%**	**7.92%**

Risk premiuns		Long	Int	Short
Premiums		4.25%	4.25%	4.25%
Rates	**6 month**	4.87%	4.74%	5.02%
beta	0.710	**7.89%**	**7.75%**	**8.04%**

Value Line Proxy Group

Risk premiuns		Long	Int	Short
Premiums		4.25%	4.25%	4.25%
Rates	**3 month**	4.68%	4.53%	4.91%
Beta	0.748	**7.86%**	**7.70%**	**8.08%**

Risk premiuns		Long	Int	Short
Premiums		4.25%	4.25%	4.25%
Rates	**6 month**	4.87%	4.74%	5.02%
Beta	0.748	**8.05%**	**7.92%**	**8.20%**

Distribution of Value Line Betas

Beta	# Of Companies With The Beta Value to the Left	Cumulative Total	% Of Companies At Or Above The Beta Value	% Of Companies Below the Beta Value	# Of Companies As a % of Total Companies	Weighted Average Of Betas
2.95	1	1	0.063%	99.937%	0.063%	0.0018
2.90	1	2	0.125%	99.875%	0.063%	0.0018
2.85		2	0.125%	99.875%	0.000%	0.0000
2.80		2	0.125%	99.875%	0.000%	0.0000
2.75	1	3	0.188%	99.812%	0.063%	0.0017
2.70		3	0.188%	99.812%	0.000%	0.0000
2.65	1	4	0.250%	99.750%	0.063%	0.0017
2.60		4	0.250%	99.750%	0.000%	0.0000
2.55		4	0.250%	99.750%	0.000%	0.0000
2.50		4	0.250%	99.750%	0.000%	0.0000
2.45	1	5	0.313%	99.687%	0.063%	0.0015
2.40	2	7	0.438%	99.562%	0.125%	0.0030
2.35		7	0.438%	99.562%	0.000%	0.0000
2.30	2	9	0.564%	99.436%	0.125%	0.0029
2.25	1	10	0.626%	99.374%	0.063%	0.0014
2.20		10	0.626%	99.374%	0.000%	0.0000
2.15		10	0.626%	99.374%	0.000%	0.0000
2.10	4	14	0.877%	99.123%	0.250%	0.0053
2.05	4	18	1.127%	98.873%	0.250%	0.0051
2.00	4	22	1.378%	98.622%	0.250%	0.0050
1.95	4	26	1.628%	98.372%	0.250%	0.0049
1.90	6	32	2.004%	97.996%	0.376%	0.0071
1.85	9	41	2.567%	97.433%	0.564%	0.0104
1.80	7	48	3.006%	96.994%	0.438%	0.0079
1.75	15	63	3.945%	96.055%	0.939%	0.0164
1.70	13	76	4.759%	95.241%	0.814%	0.0138
1.65	22	98	6.137%	93.863%	1.378%	0.0227
1.60	22	120	7.514%	92.486%	1.378%	0.0220
1.55	21	141	8.829%	91.171%	1.315%	0.0204
1.50	24	165	10.332%	89.668%	1.503%	0.0225
1.45	31	196	12.273%	87.727%	1.941%	0.0281
1.40	43	239	14.966%	85.034%	2.693%	0.0377
1.35	48	287	17.971%	82.029%	3.006%	0.0406
1.30	55	342	21.415%	78.585%	3.444%	0.0448
1.25	63	405	25.360%	74.640%	3.945%	0.0493
1.20	84	489	30.620%	69.380%	5.260%	0.0631
1.15	98	587	36.756%	63.244%	6.137%	0.0706
1.10	103	690	43.206%	56.794%	6.450%	0.0709
1.05	124	814	50.971%	49.029%	7.765%	0.0815
1.00	**133**	**947**	**59.299%**	**40.701%**	**8.328%**	**0.0833**
0.95	157	1104	69.130%	30.870%	9.831%	0.0934
0.90	144	1248	78.147%	21.853%	9.017%	0.0812
0.85	104	1352	84.659%	15.341%	6.512%	0.0554
0.80	79	1431	89.606%	10.394%	4.947%	0.0396
0.75	66	1497	93.738%	6.262%	4.133%	0.0310
0.70	39	1536	96.180%	3.820%	2.442%	0.0171
0.65	30	1566	98.059%	1.941%	1.879%	0.0122
0.60	14	1580	98.936%	1.064%	0.877%	0.0053
0.55	8	1588	99.436%	0.564%	0.501%	0.0028
0.50	4	1592	99.687%	0.313%	0.250%	0.0013
0.45	2	1594	99.812%	0.188%	0.125%	0.0006
0.40	1	1595	99.875%	0.125%	0.063%	0.0003
0.35	1	1596	99.937%	0.063%	0.063%	0.0002
0.30	1	1597	100.000%	0.000%	0.063%	0.0002
Total	1597					1.0898

Data from 11-Apr-07